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Meaningful Mathematics, Level Three. Recording Forms

and Worksheets for Pupil Use.

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GRANT

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NOTE

281p.; All documents in this series (see SE 051 187-199) done with dot matrix printer and printed on colored paper. SE 051 192 is the Teacher's Guide and

colored paper. SE 051 192 is the Teacher's Guide and

Lesson Plans for Level Three.

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DESCRIPTORS

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ABSTRACT

Mathematics and the use of mathematical thinking should be much more than what has been traditional school arithmetic. Much of the mathematical reasoning can be developed and experienced out of school, particularly in the home. This material contains recording forms and worksheets for activities for the Level Three experiences. Pupils are to complete these as part of their learning experiences. Forms and worksheets are included for all of the concepts and skills of the Level Three program. (YP)

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MEANINGFUL MATHEMATICS

LEVELTHREE

CHECORDING FORMS

APR

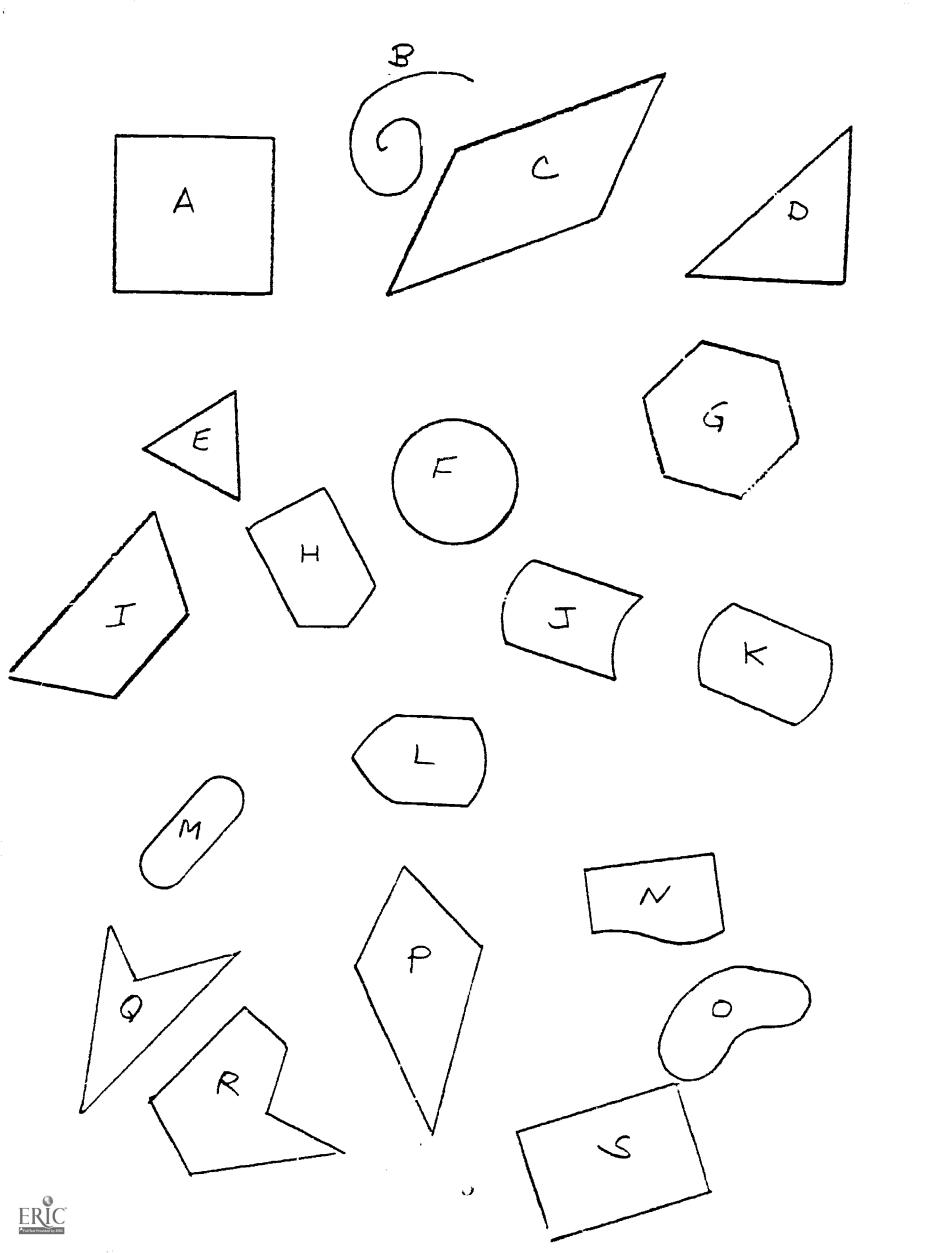
WORKSHIELD FOR PUPIL USE

COPPRISON 1900 A DEAN HENDINGSSOC, PILD.

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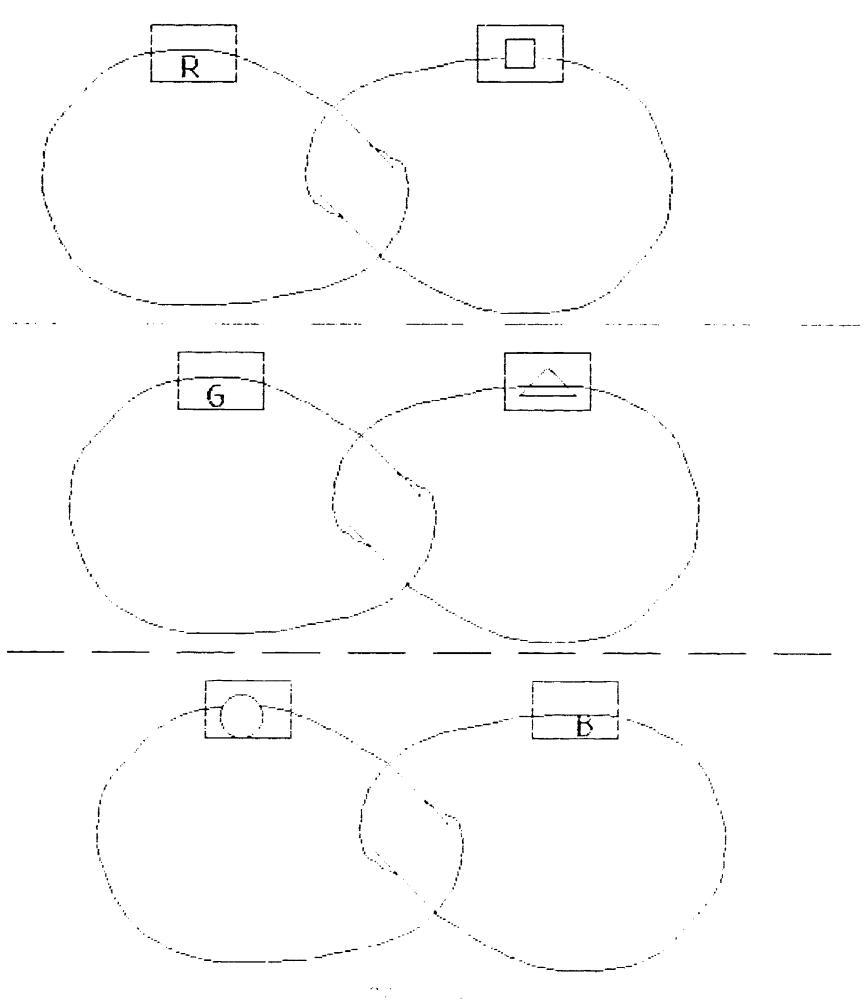
OF



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	_		
Mathumai	lician:		

"I used the LARGE pieces and sorted them according to the labels on the strings. I drew the pieces and colored them to show how I sorted them."





Mathematician:	
"I made pictures of the block	s that belonged in each group."
$\begin{bmatrix} R & R & P & Y \\ B & G & G \end{bmatrix}$	$ \begin{array}{c c} R \\ \hline G \\ \hline G \\ \hline G \end{array} $ $ \begin{array}{c c} B \\ \hline R \\ R \\ \hline R \\ R \\ R \\ \hline R \\ R \\$
Red	Not Red
Large	Not Large
Square	Not Square
RIC Translation Error	

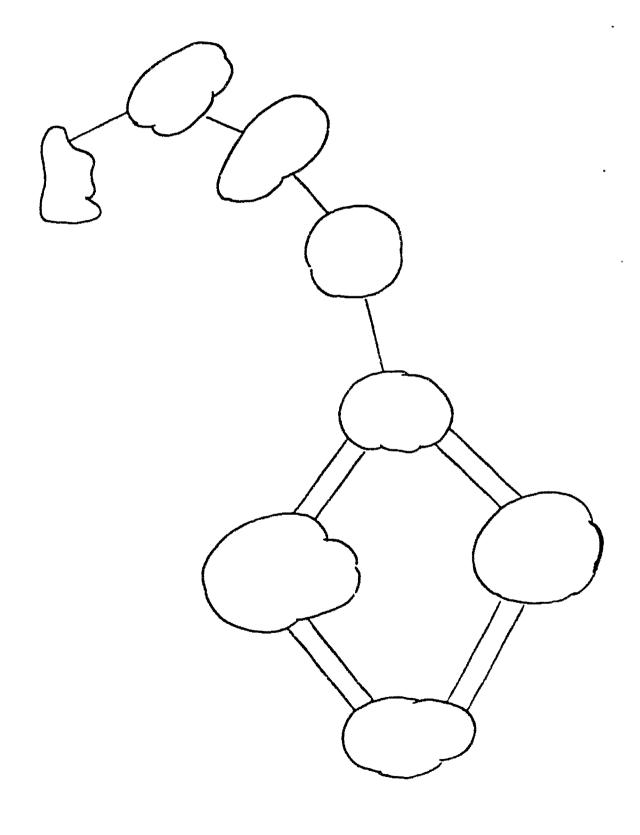
lathematician:	of the blocks that	belonged in each group."
R 3 (P) (G) (G) (F) (F) (F) (F) (F) (F) (F) (F) (F) (F	G	G B
Triengle		Not Triangle
Blue		Not Blue
Circle		Not Circle
	6	

Mathematician:	
"I made pictures of the block	s that belonged in each group.
$\begin{bmatrix} R & 3 & C & Y \\ \hline B & G & G \\ \hline \end{bmatrix}$	P P P
	<u>s</u> (g , j
Green	Not Green
	,

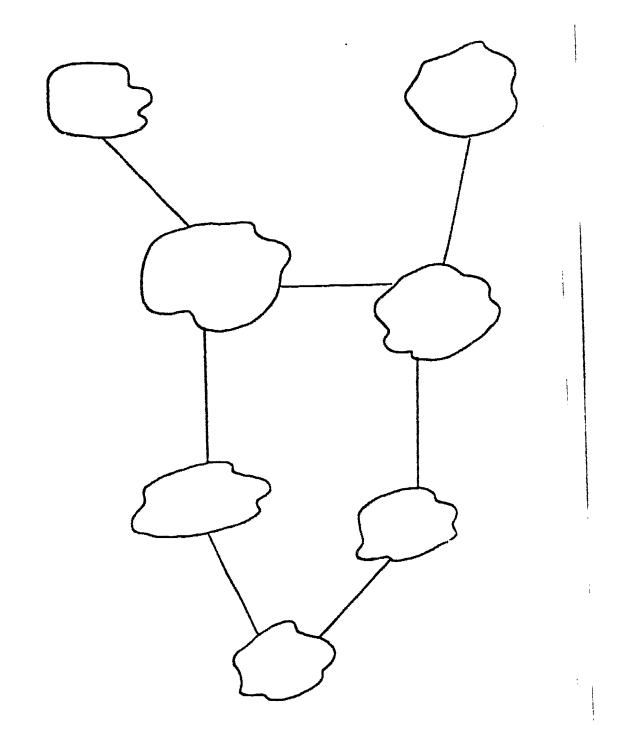
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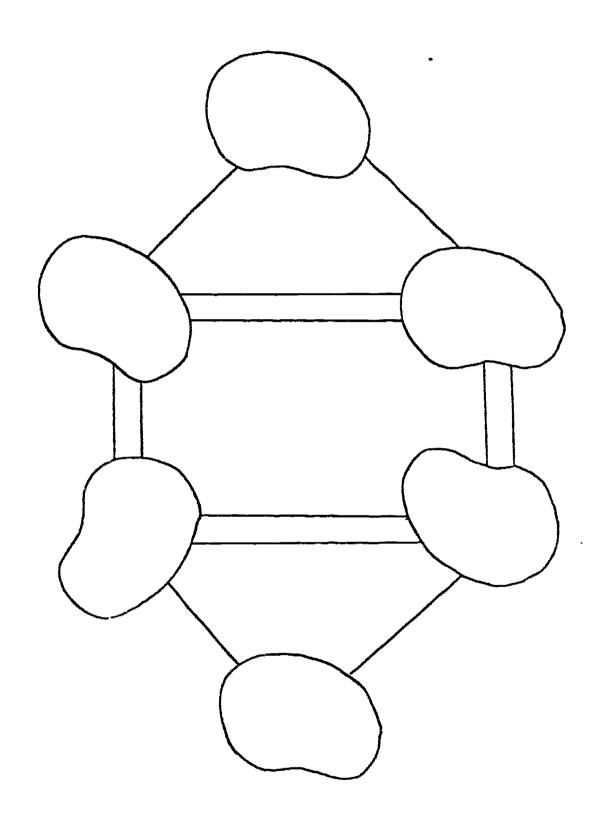
"I have traced the pieces and colored the shapes to show how I solved Logic Puzzle #1."



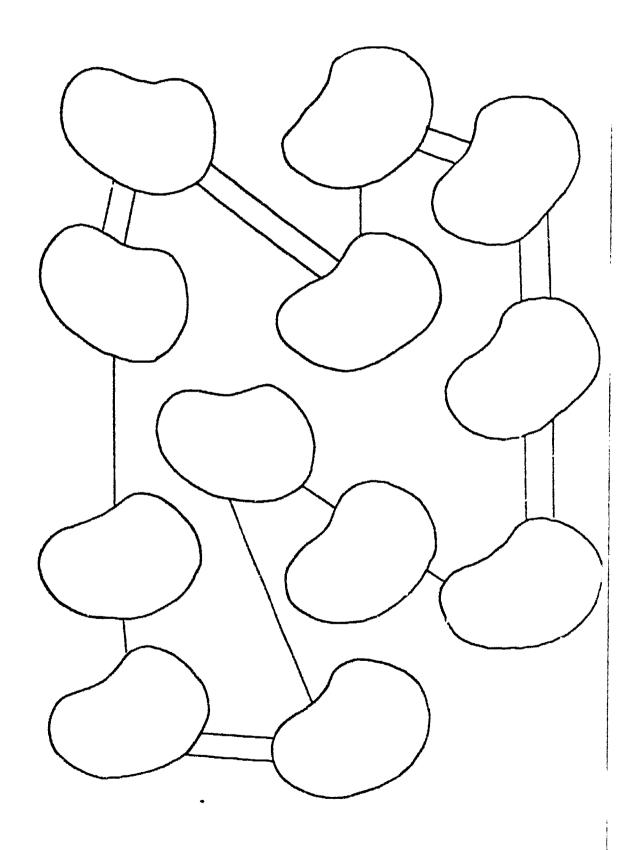
"I have traced the pieces and colored the chapes to show how I solved Logic Puzzle #2."



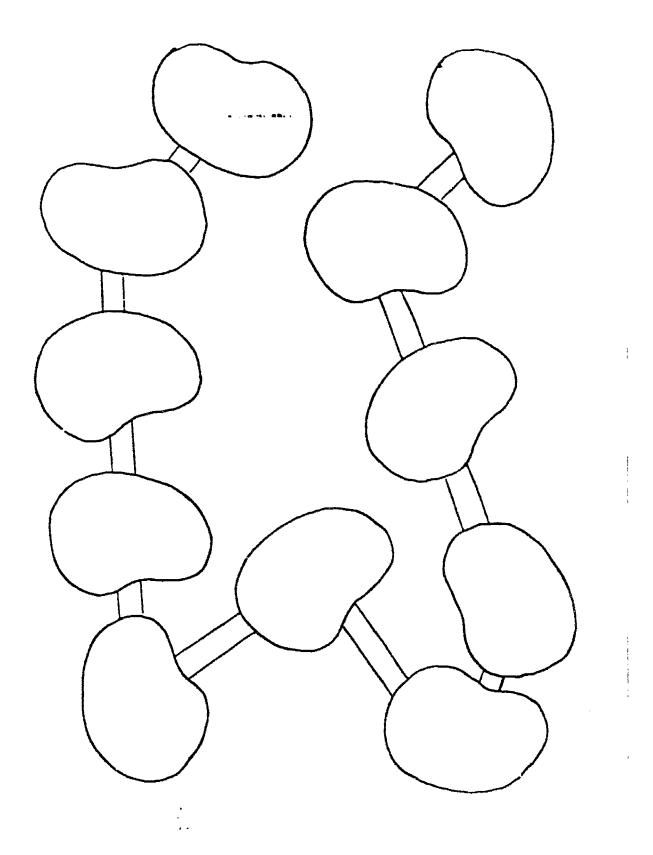
" I have traced the pieces and colored them to show how I solved the Logic Puzzle #3."



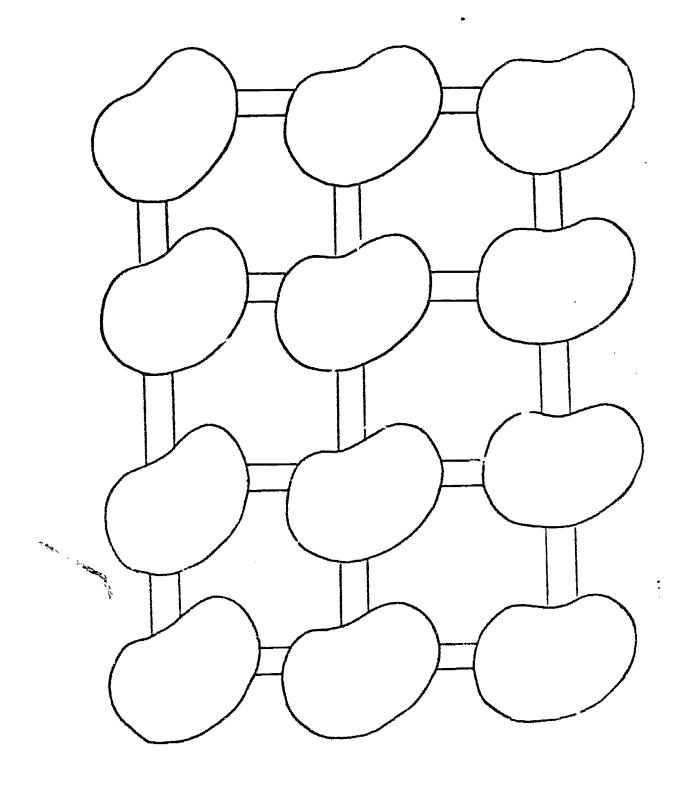
"I have traced the pieces and colored them to show how I solved the Logic Puzzle #4."



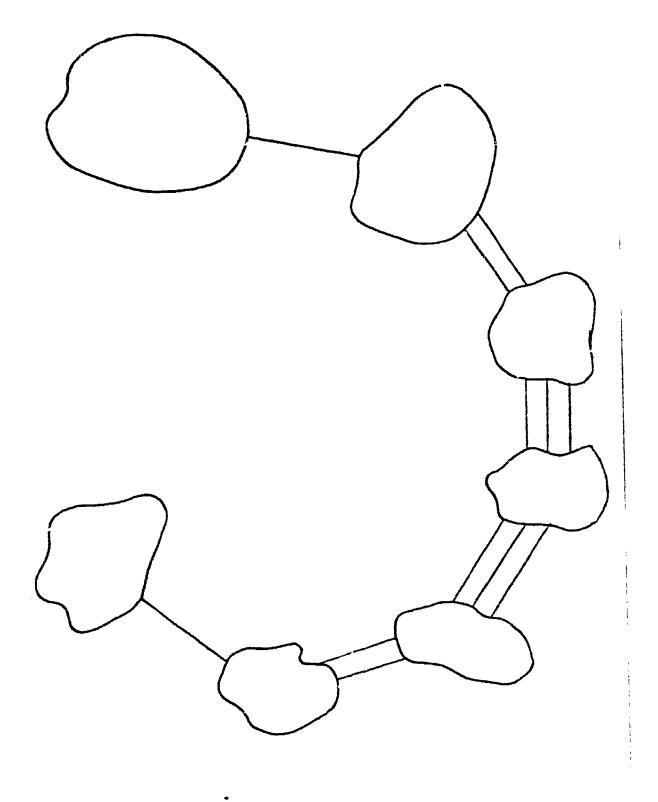
"I have traced the pieces and colored them to show how I solved the Logic Puzzle #5."



" I have traced the pieces and colored them to show how I solved the Logic Puzzle "6."



" I have traced the pieces and colored them to show how I solved the Logic Puzzle #7."



Mathematician:	
mainemailtion:	

"I traced the shapes that belonged in each of the matrix puzzles."

В			
		1	
	Y		
			9

Mathematician:	

"I traced the shapes that belonged in each of the matrix puzzles."

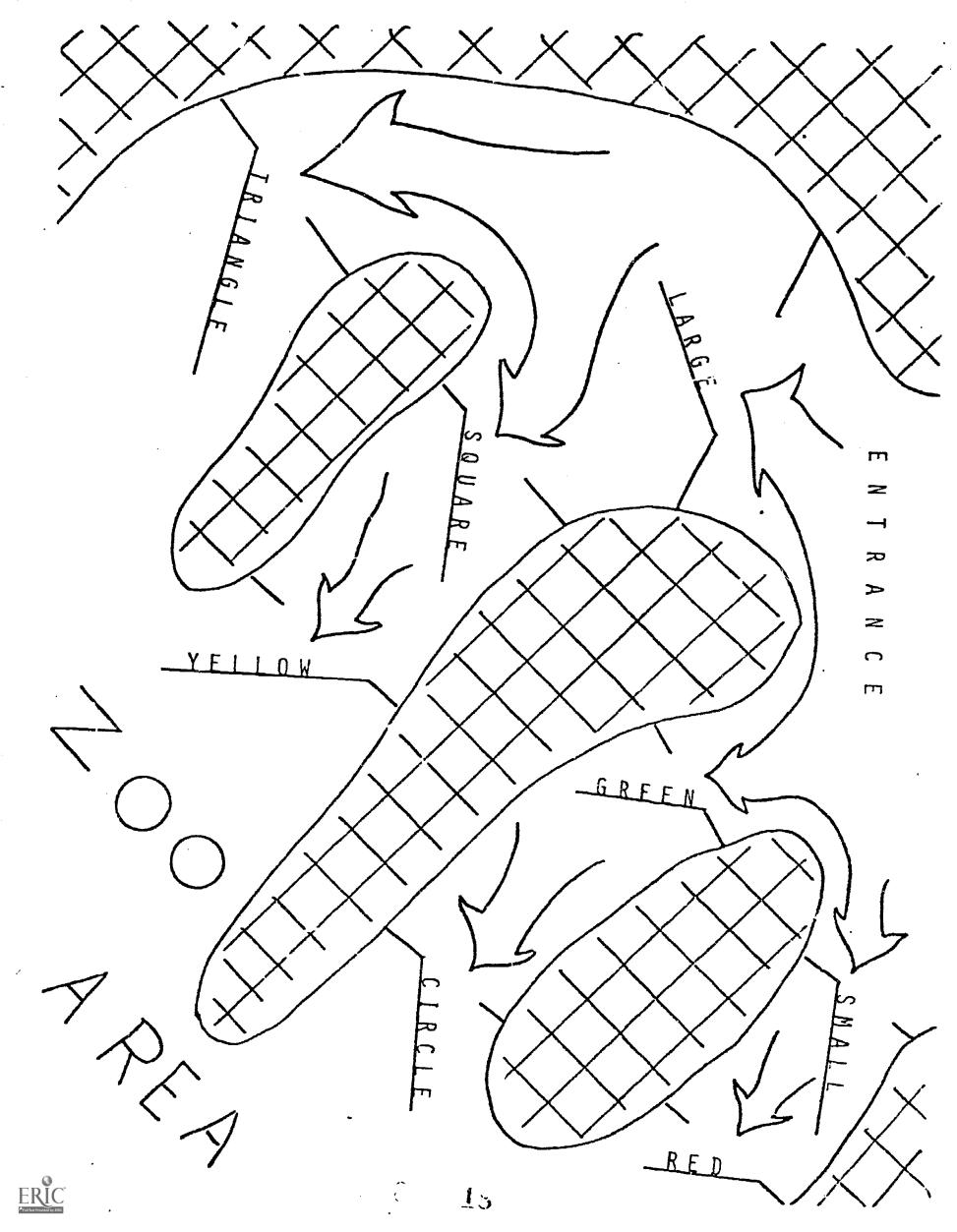
R		
	B	
		X

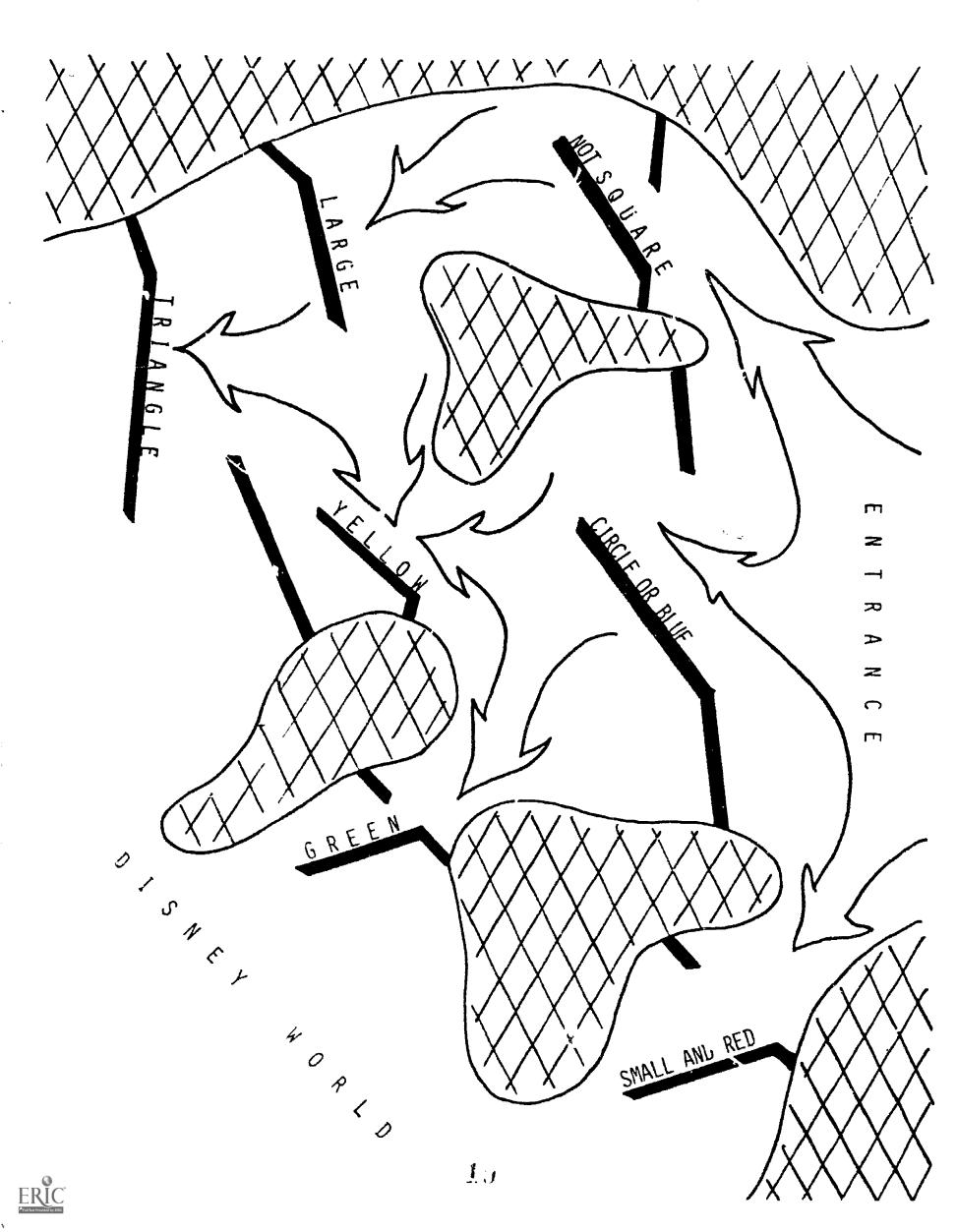
Mothematician:

"I traced the shapes that belonged in each of the matrix puzzles."

R			
	9		
		B	
			Y







MATHEMATICIAN:____

" I have traced and colored the shapes that made it into DISNEY WORLD.."



MATHEMATICIAN:_____

" I have traced and colored the shapes that made it into the ZOO."



Mathematicion:____

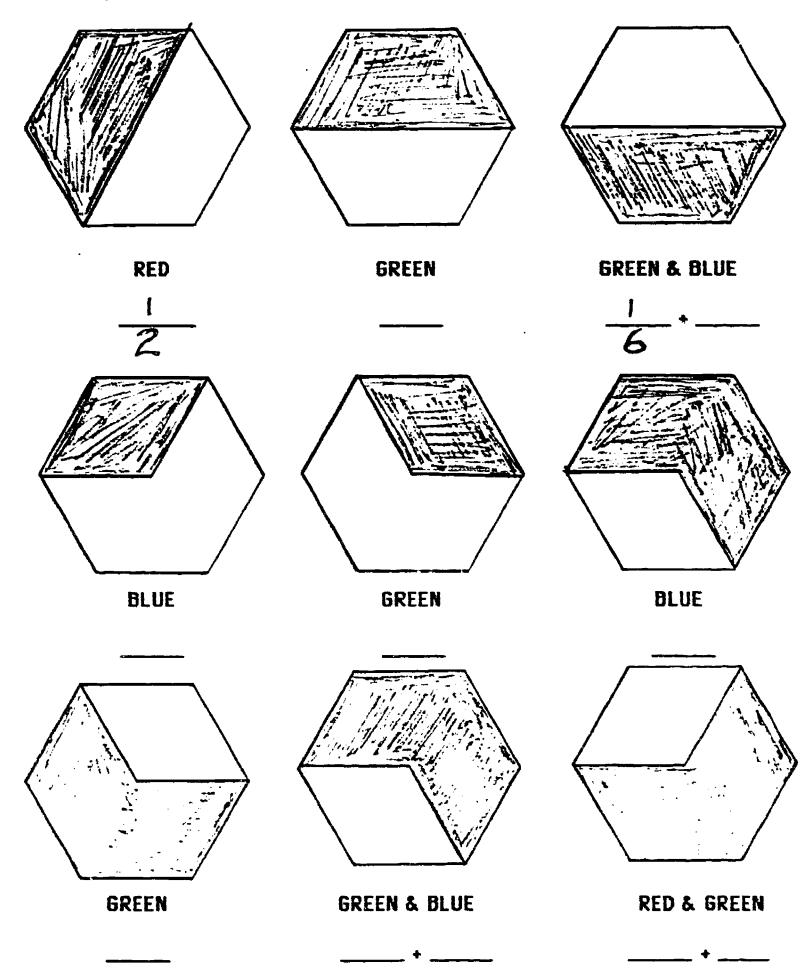
"I used number slides to solve the number sentences."

2十4= □	5= -14	5-1= [
D=12+9	7=19-1	<u> </u>
8+17 = 19	<u> </u>	8 =
<u> </u>	20-5 - 5	7=16-[]
16 = 9 +]	13-13	9-12- [].
· 18 = 12 + []	1-5-12	12 - [] - 3
<u> </u>	9-[]-2	6 - 11
1-+6	= 17-14	4=16-1
18: 17-5	14= -5	20-[-6
19= (-1	110 = 1 1 - 1	



FRACTIONS

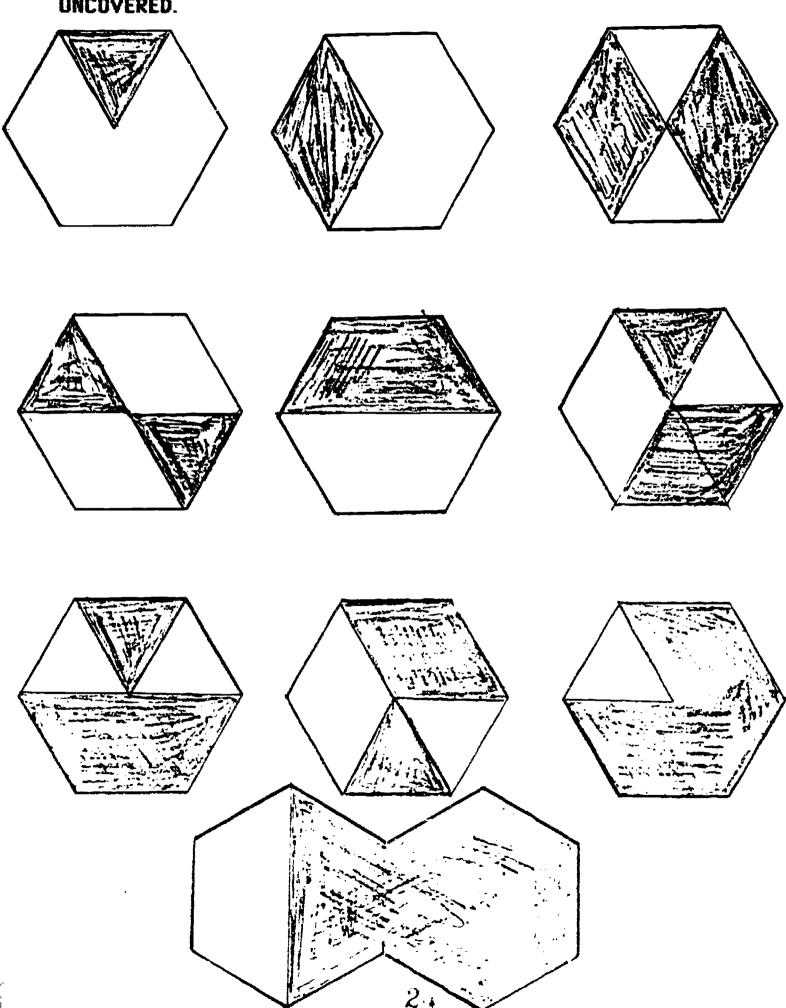
Cover the shaded portion of each hexagon (yellow) with the pieces asked for and write the fractions.



MAT	THEMAT	ICIAN	

MORE FRACTIONS

Cover the shaded part with Pattern Blocks. Write the fractions on an UNCOVERED part to show what part of the whole is UNCOVERED.





MATHEMATICIAN:_

RED =
$$1/2$$

Use Pottern Blocks to find the answers to these.

$$1/2 \times 1/3 = \frac{1}{2}$$

$$1/2 \rightarrow 3 = \frac{1}{2}$$

Five Sixths	NUMERAL 1/2	Green	G ROD NAME
One Sixth Two Thirds Two Sixths Three Sixths Four Sixths			
Two Thirds Two Sixths Three Sixths Four Sixths Five Sixths			
Two Sixths Three Sixths Five Sixths			
Three Sixths Five Sixths			
Five Sixths		Ī	
Five Sixths		·	
These are more than	dne		
Seven Sixths	7/6 = 1 1/6	Black	K
Eight Sixths			
Nine Sixths			
Three lialves			
Faur Thirds			
Five Thirds			
Ten Sixths			
		25	

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One Half

"I found a rod ONE HALF as long as each rod, or train of rods, given; and completed a sentence showing this. If I couldn't find one, I wrote No Rod = 1/2."

RODS	SENTENCE
Example: D G G L G L D D D D D D D D D D D D	G = 1/2 D
G	No rod = 1/2 G
K (black)	
N (brown)	
E (blue)	

MATHEMATICIAN:		
	ONE THIRD	

"I found a rod ONE THIRD as long as each rod, or train of rods given, and completed a sentence showing this. If I coouldn't find one, I wrote No Rod - 1/3."

SENTENCE

KUVO	JENIENLE
R	No Roa = 1/3
W	
G	
Y	
Ð	
K	
N	
E	
0 + W	
0 + R	
0 + G	
0 + P	
N + Y	
0 + D	
0 + K	
0 + N	
N + F	
20 FRIC	25

MATHEMATICIAN-	
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ONE FOURTH
"I found a rod ONE FOURTH as long as each rod, or train of rods given, and completed a sentence showing this of the long of the

RUDS	SENTENCE
*	No Rod = 1/4 W
R	
Ē	
Y	
D	
K	
Ņ	
Ε	
ű + Á	
C + R	
0 + G	
0 + P	
0 + Y	
0 + D	
0 + K	
0 + N	
N + F	
a 20	2) .

Mathematician:	ician:			
	Parts of Ten	= 0	NE	
RODS		S	ENTENCE	
W			W = 1/10	
R			,	
G				
P				
Y				
D				
K				
N				
E				



RODS USED	D = ONE	FRACTION NAMES
D		1/3 = 2/6
R		
ww		
G		
w w w		
P		
•		
Y		
D		
K		
N		
£ 		
U	3 2	

PORT AND THE	ININING FRACTIONS D = ONE A		
	RODS JOINED	NUMBER SENTENCE	
N 3			
	h + h		
	n . v		
	P + Y		
	P:D		
	Y : P		
	Y : Y		
	R + W + W	1/3 + 1/6 + 1/6 = 4/6 = 2/3	
	R + W + R		
	R + W + C	i	

MATHE	MATICIAN:	
	JOINING FRACTIONS RODS JOINED	D = ONF A NUMBER SENTENCE
	R + W + P	
	 	
	R + G + G	
	R·C·R	
 ,		
	G ÷ P + R	
	 	
	G + F + \	
	C:P:R	
	G + R + \	
	PiYiW	
	~	
ÎC.	CIYIR	
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RODS		SENTENCE
O (Orange)		
0	W	
0 + R		
0 + G		
0 + P		
O + Y (YELLOW)		
0 + D		
0 + K		
O + N		
0 + E		
20		
FRIC	e.	35



Mathematician:	

"Given the following rods as the ONE rod, I found what fractions all shorter rods are of this ONE rod."

The ONE Rod		Fractions of the CHE Red	*
Example:	G	W = 1/3 R = 2/3	
	. P	B = =	
		₩ =	
	Y	P =	
		G =	
		P =	
		W =	
	D	R =	
		S =	
		P =	
		Y =	
FRIC	3		

Mathematicien:	

"Given the following rods as the ONE rod, I found what fractions all shorter rods are of this ONE rod."

The BNE Rod	Fractions of the ONE Rod
K	₩ =
	R =
	G =
	P =
	Y =
N	W =
	R =
	G =
	P =
	Y =
	D =
	K =

The ONE Rod	Fractions of the ONE Rod
Ε	₩ =
	R =
	G =
	P =
	Y =
	D =
	K =
	N =
n	₩ =
	R =
	G =
	P -
	Y =
	D -
	K . =
	N =
ERIC	£ =

MATHEMATICIAN:		
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"I used the D rod as ONE and other rods as fractions. I compared these in different ways, FINDING THE DIFFERENCE between them "

RODS COMPARED	DIFFERENCE	NUMBER SENTENCE(S
Example 1:		
R	W = 1/6	1/2 - 1/3 = 1/6 3/6 - 2/6 = 1/6
<u> </u>		
xample 2		
K G	P = 2/3	7/6 - 1/2 = 2/3 7/6 - 3/6 = 4/6 7/6 - 3/6 = 2/3
Cand My		
P and W		
P and R		
P and G		
~ 3.a		

"I used the D rod as ONE and other rods as fractions. I compared these in different ways, FINDING THE DIFFERENCE between them."

,	

MATHEMATICIAN:	<u> </u>
----------------	----------

"I used the D rod as ONE and other rods as fractions. I compared these in different ways, FINDING THE DIFFERENCE between them."

RODS COMPARED		DIFFERENCE	NUMBER SENTENCE(S
D and G			
D and P			
D and Y			
K and W			
K and R			
K and G	41		

"I used the D rod as ONE and other rods as fractions. I compared these in different ways, FINDING THE DIFFERENCE between them."

RODS COMPARED		DIFFERENCE	NUMBER SENTENCE(S)
K and P			
K and Y			
K end D			
N and W			
N and Q			
N and G	4		

MATHEMATICIAN:		Pg. 5 —			
Cemparing	Fractions				
"I used the D rod as ONE and other rods as THE DIFFERENCE between them."	"I used the D rod as ONE and other rods as fractions. I compared these in different ways, FINDING THE DIFFERENCE between them."				
RODS COMPARED	DIFFERENCE	NUMBER SENTENCE(S)			
N and P					
N and Y					
N and K					

MATHEMATICIAN:_____

"I used C rods with D = ONE to work these."

Parts Given	Pods Used	Joined? or Compared?	Rod Result	Numeral
Example:				
1/6 + 5/6	₩, Υ	Joi ned	D	6/6 = 1
2/3 - 1/6				
5/6 - 1/2				
1/2 + 1/6				
1/6 + 2/3				
2/3 - 1/2				
5/6 - 2/3				
1 - 5/6				
1 - 2/3				
1 + 1/6				
5/6 - 1/6				
These are more tha	n one			
Fx - 7/6 - 1/2	K, G	Compared	P	4/6 = 2/3
7/G - 2/3				
7/6 - 1/3				
7/6 + 1/6				
4/3 + 1/6				
4/3 + 1/2				
RIC.		a.		

ERIC C

MATHEMATICIAN:	
	i used C rods with D = ONE to work these."

Rods Used	Joined? or Compared?	or Compared? Rod Result Nume		
		1		
<u> </u>	<u> </u>			
1				
•	 			
	<u> </u>			
ian one				
			1	
	The states			
			<u> </u>	
1		\$	1	
	Mods Used			

MATHEMATICIAN:	

"I found how many fractions I could get from other fractions using Cuisenaire Rods. The D rod is ONE."

s Used	Fractions Used	Number Sentence
W from R	1/6 from 1/3	1/3 - 1/6 = 2
P from	2/3 from 5/6	5/6÷ 2/3 = 1 1/4
W from G		
W from P		
₩ from Y		
R from G		
R from P		

MITHEMITION		
"I found how many fractions I could g		Pg. 2
D red is ONE."	ot ii om other ridetions as	ing cursulative Rous. The
Rods Used	Fractions Used	Number Sentence
R from Y		
R from D		
G from P		
G from Y		
P from Y		

4 .

ERIC

P from D

Y from D

MATHEMATICIAN:_____

"! used my folded paper to find these fraction answers."

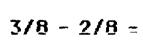


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l	 1

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i	- 1
İ	İ
ļ	1
j	1

•	
- 1	1
•	3
- 1	
	1
-	
ı	









Taking Avay Fractions

"I used a SIX UNIFIX cube link as ONE, with other links as fractions. I took smaller fractions away from larger fractions."

			= ONE

Started \	Started With		I Broke Away		eft	Number Sentence
No. of Cubes	Fraction	No. of Cubes	Fraction	No. of Cubes	Fraction	
Example:						
4	4/6 or 2/3	1	1/6	3	3/6 or 1/2	2/3 - 1/6 = 1/2
2						
3						
3		Z				
4		1				
4		2				
4		3				
5		1				
5		2				
5		3				
5 UC		4				
Levided by ERIC		1	4	J	1 1	

Mathematicien:	Pg. <u>2</u>	<u> </u>
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Taking Away Fractions

"I used a SIX UNIFIX cube link as ONE, with other links as fractions. I took smaller fractions away from larger fractions."

Started With		tarted With ! Broke Avay		l Had I	eft	Number Sentence
No. of Cubes	Fraction	No. of Cuhes	Fraction	Ne. of Cubes	Fraction	
6		1				
6		2				
6		3				
6		4				
6		5				
6		6				
7		/				
7	-	2				
7		3				
7		4				
7		5				
7		6				
Ĉ.			້ວ່າ			

	-	₹
Mathematician:	Pg.	<u> </u>

Taking Away Fractions

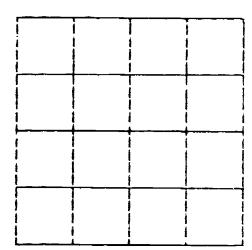
Started With		l Broke Avay		l Had l	.eft	Number Sentence
No. of Cubes	Fraction	No. of Cuhes	Fraction	No. of Cubes	Fraction	
8	······································	1				
8		2				
8		3				
8		4				
8		5				
8		6				
e de la companya de l						
<u>C</u>						

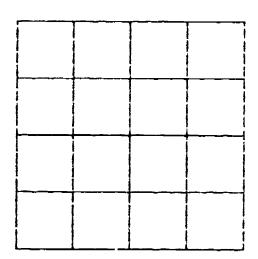
Mathematician:__

"I colored in the fractions as shown and used "<" or ">" to show which fraction was larger."

1/2

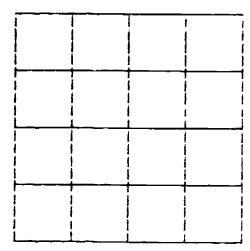


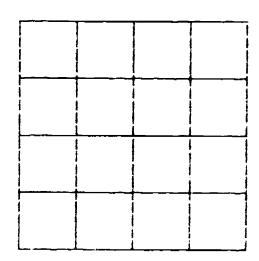




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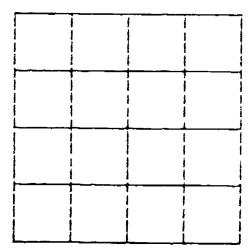
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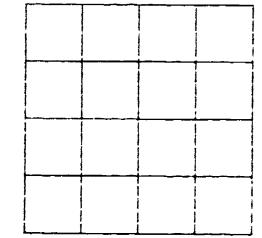




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3/4



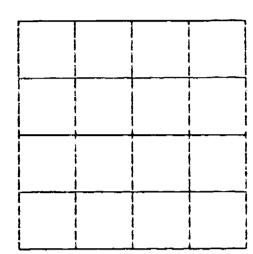


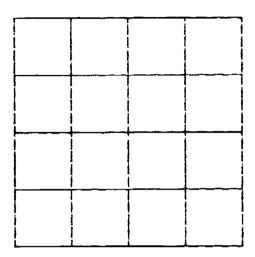
Mathematician:__

"I colored in the fractions as shown and used "<" or ">"
to show which fraction was larger."

<u>7/8</u>

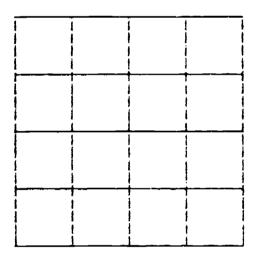


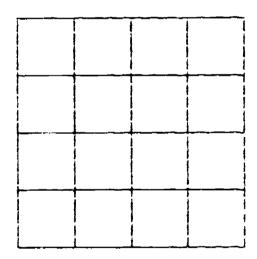




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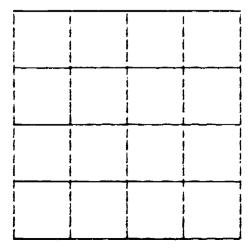
3/4

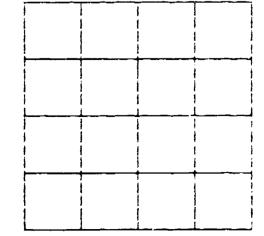




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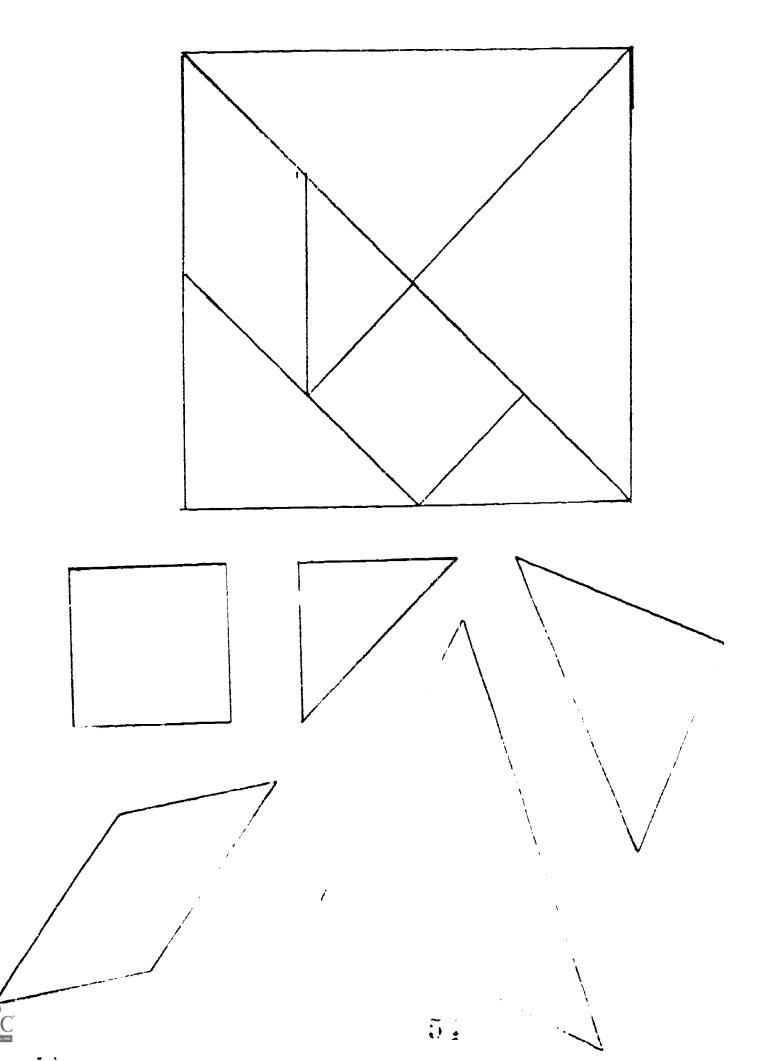
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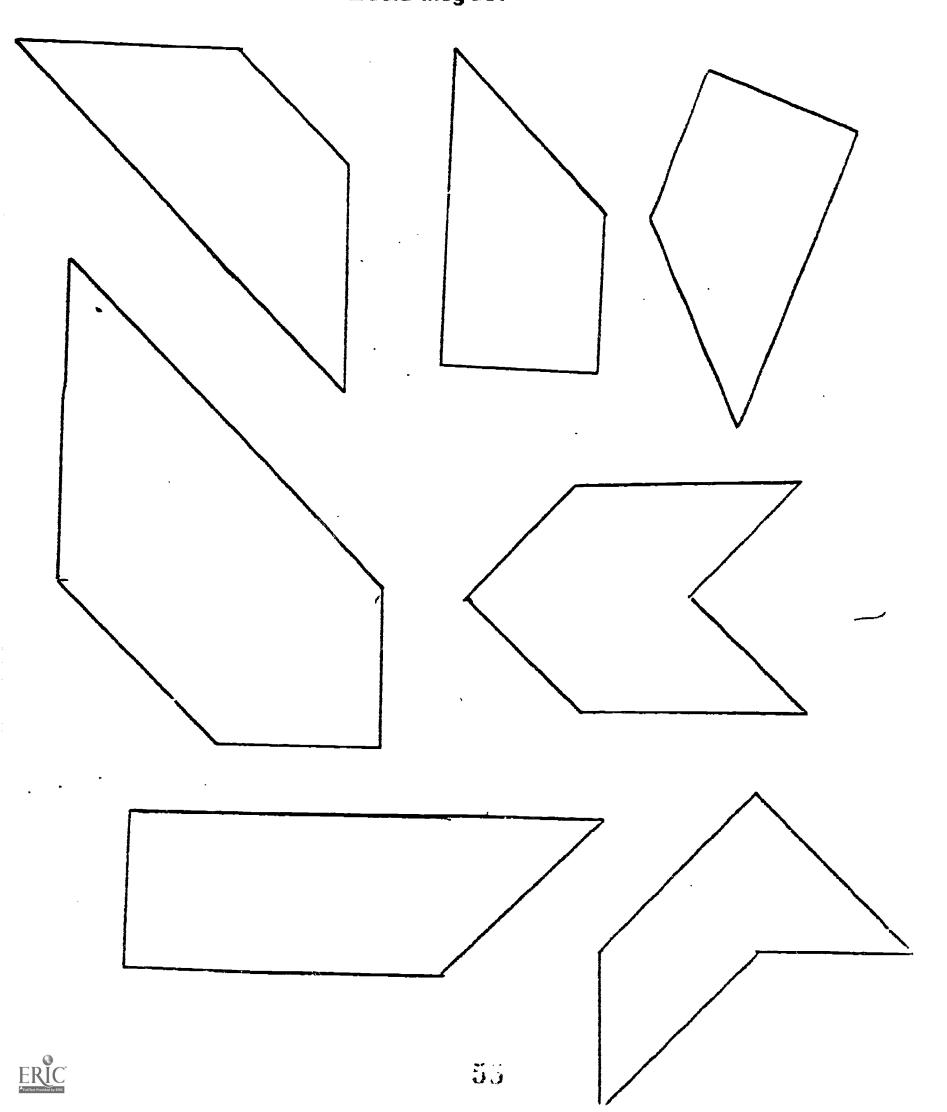


Ma	thematician:				

"Here is how the Tangrams make a square. The square is ONE.
I gave fraction names to these pieces and to the Tangram shapes given."



"If we had Tangram pieces that look like these, what part of ONE (fraction) would they be?"



Mathematician:							
"I draw a shape different from the one given in ONE way and told how it was different as best I could."							
Shape	My Shape	How it is different					
Example:		It doesn't have sides ALL the same length					



Mathematician	١	
i iothchiaillian		

Pg. 2

"I draw a shape different from the one given in ONE way and told how it was different as best I could."

Shape	My Shape	How it is different
(0)		



MATHEMATICIAN:	
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"! compared the geoblocks and the larger of two blocks for different pairs of blocks. I circled the letter of the larger block and filled in the blanks."

81.0	CKS C	OMPARED	BLOCK is	smaller than	BLOCK
A	and	В	_	<	
A	and	C		<	
A	and	D		∢	
Å	and	E		<	
ß	and	c		<	
8	and	D		<	
B	and	E	·	<	
C	and	D		‹	
C	and	F		<	
Ð	and	F		<	
-T1	ie sm	allest blocks	s		
	<	<			
Sm	alles	t	7	arnoct	



MATHEMATICIAN:_		

My Hundreds Computer

Humber	Hundreds	Tens	Ones			•
						·
				-	-	
					1	
					1	
				•		
					+	
				•	-	
3"					\perp	

"This is my record of numbers seen in base ten."

Cover Position	Number seen	Numeral
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
RIC.	Ü	ı

Mathematician:_____

"Our group built numbers as shown."

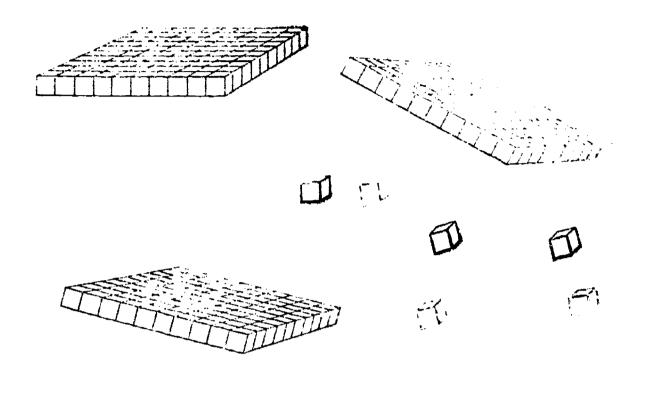
Build	Using	How many of each
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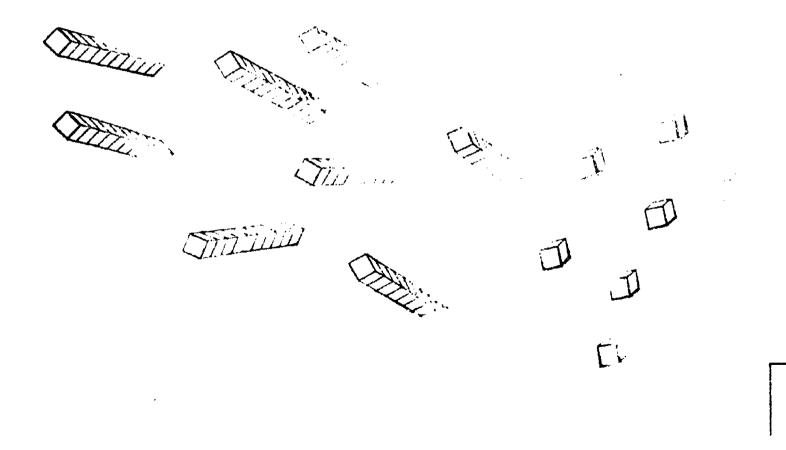
Mathematician:

"Our group built numbers as shown."

Build	Using	How many of each?
	(GUESS!)	
ERIC		

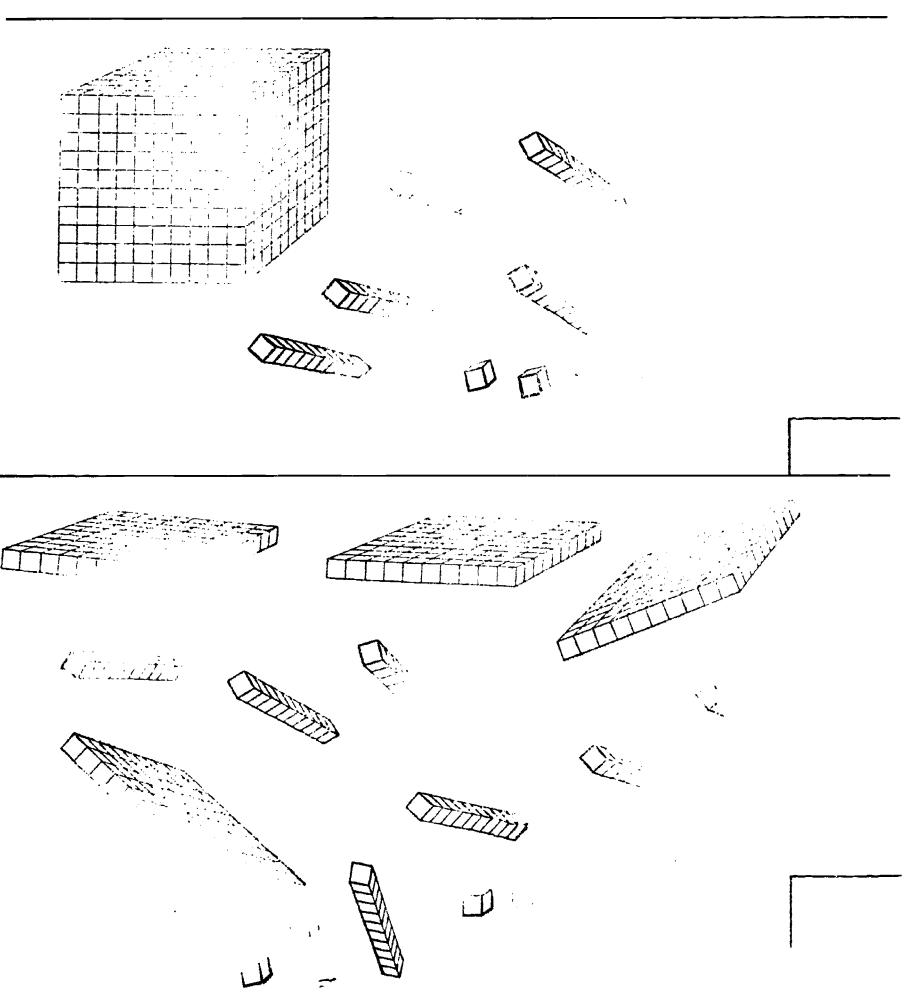
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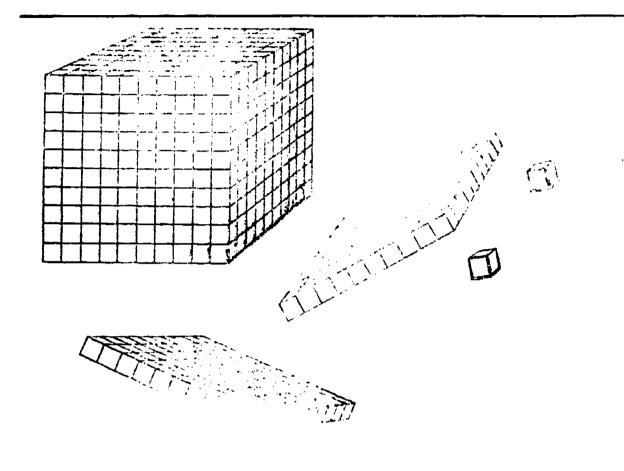


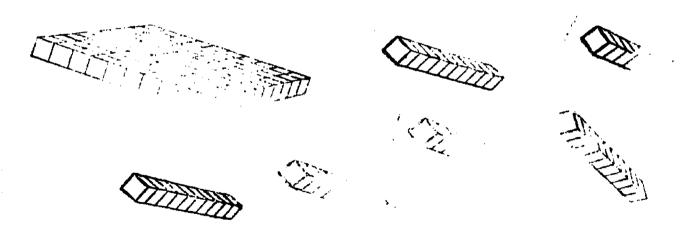
Mathematician:	
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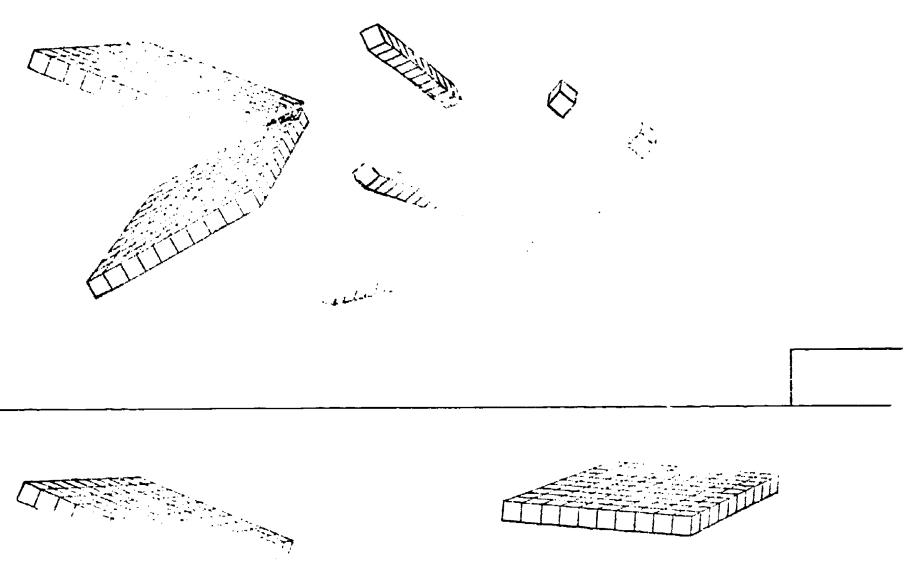
Mathematician:	
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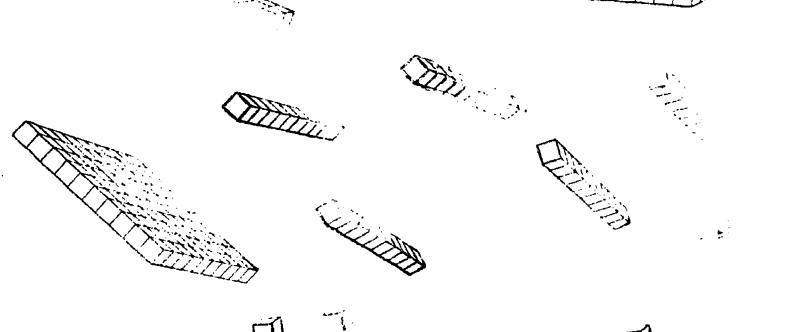






Mathematician:







MATHEMATICIAN:_____

My pictures, numerals, and words for numbers I built with base ten blocks.

Words	Pictures	Numerals
SIXTY TVO	Hundreds Tens Ones	
	Hundreds Tens Ones	
	Hundreds Tens Ones	83
	Hundreds Tens Ones	
ERIC	$\mathbf{G}_{\mathbf{r}}$	

MATHEMATICIAN:	

"My pictures, numerals, and words for numbers I built with base ten blocks."

Words	Pictures	Numerals
26	Hundreds Tens Ones	
	Hundreds Tens Ones	
	Hundreds Tens Ones	50
	Hundreds Tens Ones	
ERIC	6,	

MATHEMATICIAN:_____

"My pictures, numerals, and words for numbers | built with base ten blocks."

Words	Pictures	Numerals
Seventy five	Hundreds Tens Ones	
	Hundreds Tens Ones	
One hundred Seven	Hundreds Tens Ones	
	Hundreds Tens Ones	36
ERIC.	€.,	

MATHEMATICIAN:_____

"My pictures, numerals, and words for numbers I built with base ten blocks."

Words	Pictures	Numerals
Eighty three	Hundreds Tens Ones	
	Hundreds Tens Ones	
	Hundreds Tens Ones	112_
hine+y	Hundreds Tens Ones	
ERIC PROJECT PROJECT PER PROJE		

MATHEMAT CIAN:

*My pictures, numerals, and words for numbers I built with base ten blocks.**

Words	Pictures	Numerals
	Hyndreds Tens Ones	
	Hundreds Tens Ones	106
forty four	Hundreds Tens Ones	
FIFTY	Hundreds Tens Ones	
ERIC.	71	

MATHEMATIC	ian:
	1

"My pictures, numerals, and words for numbers I built with base ten blocks."

Pictures	Words	Numerals
	211undreds 1 Tens 3 Ones	Hundreds Tens Ones
	HundredsTensOnes	Hundreds Tens Unes
	Hundred:TensOnes	Hundreds Tens Ones
	_llundreds <u>O</u> Tens <u>Z</u> ûnes	Hundreds Tens Ones
ERÍC	7 7 7 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	

MATHEMATICIAN:	

"My pictures, numerals, and words for numbers I built with base ten blocks."

Pictures	Words	Numerals
	HundredsTensOnes	Hundreds Tens Ones
	Hundreds 4 Tens 2 Ones	Hundreds Tens Cines
	HundredoTensOnes	Hundreds Tens Ones
	HundredsTensNnes	Hundreds Tens Unes
ERIC	/og . 1 →	

MATHEMATICIAN:	

"My pictures, numerals, and words for numbers i built with base ten blocks."

Fictures	words	Numerals
	HundredsTensOnes	Hundreds Tens Ones
	Hundreds O Tens 9 Ones	Hundreds Tens Ones
	HundredoTensOnes	Hundreds Tens Ones
	— Hundreds — Tens — Ones	Hundreds Tens Ones
ERIC	74	

"My pictures, numerals, and words for numbers I built with base ten blocks."

Pictures	Words	Numerals
	HundredsTensOnes	Hundreds Tens Ones
	HundredsTensOnes	Hundreds Tens Ones 6 2
	HundredoTensOnes	dreds Tens Unes
	Hundreds <u>4</u> TensOnes	Hundreds Tens Ones
ERIC.	7.)	

MATHEMATICIAN:_____

"My pictures, numerals, and words for numbers I built with base ten blocks."

Pictures	Words	Numerals
	2 Hundreds O Tens 1 Ones	Hundreds Tens Ones
	HundredsTensOnes	Hundreds Tens Ones
3 0	HundredoTensOnes	Hundreds Tens Ones
	HundredsTensOnes	Hundreds Tens Ones
ERIC	7-,	

Mothematician:			

*My pictures, numerals and words for numbers I built with base ten blocks.**

Pictures	Numerals	Words
		one hunderd five
	3 9	
	44	
ERIC Printed Production (1970)	t∩ਾ : \$ ਵੰ	

Tily pictures, numerals and words for numbers | built with base ten blocks."

Pictures	Numerals	Words
	3 7	
		forty
	103	
ERIC	73	

Muthematician:	

"My pictures, numerals and words for numbers I built with base ten blocks."

Pictures .	dumerals	Words
	8 3	
		ninety
	211	
FRIC	ž. võ	

"My pictures, numerals and words for numbers! built with base ten blocks."

Pictures	Numerais	Words
	2 1 0	
		Fifiy fire
	102	
	C.1	

Mathematician:		
	 _	

Number Words	Picture	Numeral
Starting Number		
twelve		
3		
ERIC.	£ 3	

Mathama	tician:		
110111121110			

Number Words	Picture	Numeral
Starting Number		
hineteen		
twenty two		
forty four		
twenty nine		
twenty		
eighty Eric		

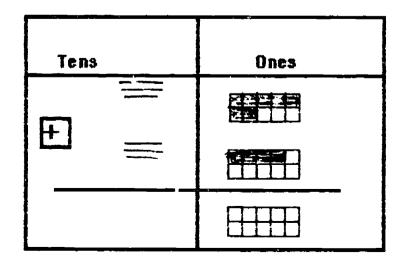
Number Words	Picture	Numeral
Starting Number		
twenty one		
eighty four		
Seventy nine		
one hundred thirty three		
Severing frue		
ninety		
ERIC.	80	

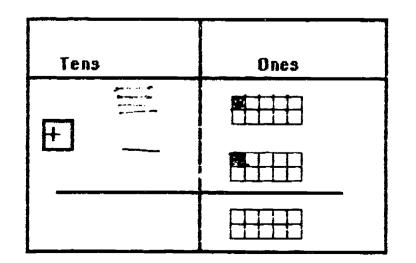
Number Words	Picture	Mr.mer&
Starting Number		
Fourteen		
Twenty six		
Forty +wo		
Sixty eight		
ninety one		
-twelve		
i	84	
ERIC.	17.2	

Mathematician:__ "I added the bottom number to the top number to find the answer Example Tens Ones Tens Ones E + Tens Ones Tens Ones E E Tens Ones Tens On. E 4-

Mathematician:__ "I added the bottom number to the top number to find the answer Tens Ones Tens Ones E + Tens Ones Tens Ones E E Tens Ones Tens Ones Ŧ E

	ian: I added the bot	to the top numb	er to find the an	IS W E
Tens	Ones	Tens	Ones	
+ =		H =		
Tens	Ones	 Tens	Ones	1
E E		E		

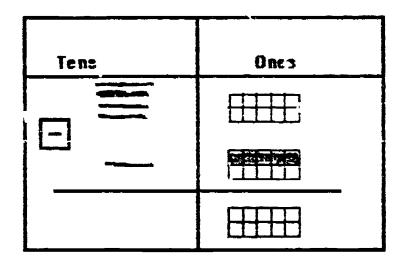




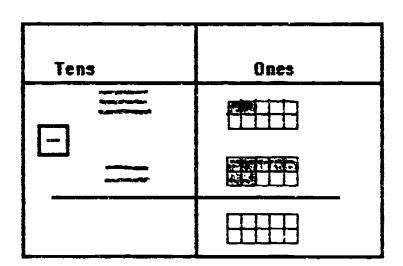


"I took the bottom number from the top number to find the answer."

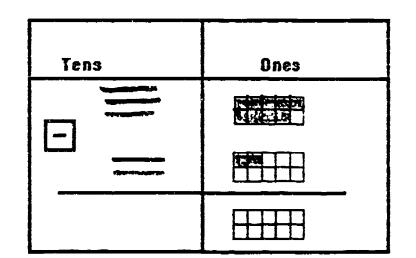
Exam	- '5 , G	-
Tens		Ones
		MV.
	Martin alle	



Ten	3	Ones
<u>. [</u>		



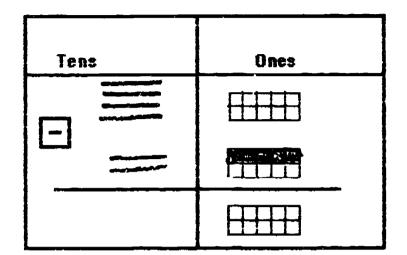
Ten	3	Ones
[-]		
	Made to Trough to the State of	



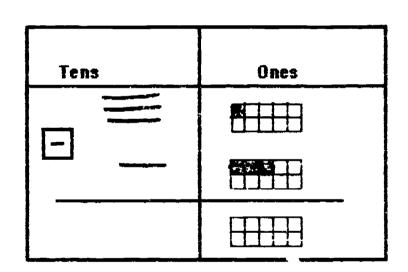


"I took the bottom number from the top number to find the answer."

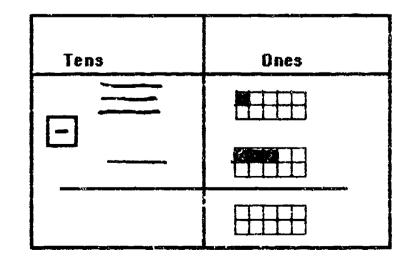
Tens	Ones



Tens	3	Ones
		



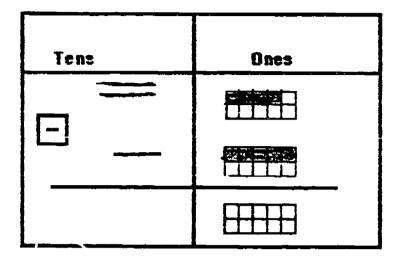
Ten	13	Ones
	eshessine milih Manadasak	



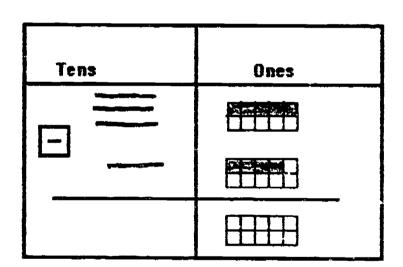


"I took the bottom number from the top number to find the answer."

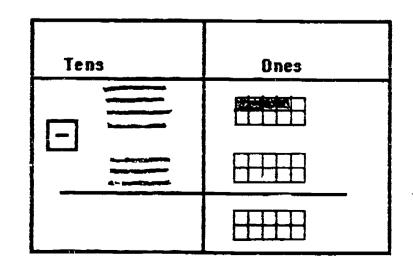
Ten:	3	Ones	



Tens	;	Ones



Tens	Ones
• ,	





"I did these additions and checked the answer by subtraction."

Tens	Ones
2	4
+2	4

Tens	Ones
3	0
+ 2	5

Tens	Ones
2	9
+ 3	9

Tens	Unes
3	2
+2	8

Check: Tens	Ones
	ĺ

Tens	Ones

Tens	Ones

Tens	Ones

Tens	Ones
5	4
+ 3	8.

Tens	Ones

"I did these additions and checked the answer by subtraction."

Tens	Ones
4	3
+ +	7
•	

Tens	Ones
5	2
+5	9

Tens	Ones
6	1
+3	8

1	ens	Unes
_	4	7
+	4	1
_		

Check: Tens	Ones

Tens	Ones
,	

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Tens	Ones

"I did these actitions and checked the answer by subtraction."

Tens	Ones
3	4
+4	9
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Tens	Ones
6	2
45	7

•	Tens	Opes
-	2	9
+	3	9

	16119	Oues
	6	9
+	3	9

Check: Tens	Ones

Tens	Ones

Tens	Ones

Tens	Ones

Tens	Ones
4	3
+ 4	4

Tens	Ones
	<u> </u>

Tens	Ones

Mathematician:

"I did these additions and checked the answer by subtraction."

Tens	Ones
4	3
+3	8

Tens	Ones
4	2
+3	9

Tens	Ones
6	4
+6	4

Check: Tens	Ones

Tens	Ones
<u> </u>	-

Tens	Ones

Tens	Ones

Tens	Ones
	-

MATHEMATICIAN:_____

"I used base ten blocks to add and to check my answer by subtracting."

	Addi	tions	Chec	ks	Addi	tions	Chec	ks
Exampl	e: Tens	Ones	Tens	Ones	Tens	Ones	Tens	Ones
	2	5	7	0	3	5		-
	+	4	-	5	+	1		
	<u></u>		2	6	2			
			4	4				
	1	б			1	8		
	+2	3			+3	4		
	+ 2	5			, 5	2		
	3	5			+ 3			
	2	7			4	8		
	+ 2	3			+ 3	8		***
	2	5			2	ç		
	+ 2	5			+1	8	\$ \$	
	~							
								-
~ -				95				

MATHEMATICIAN:_____

"I used base ten blocks to do the subractions and checked my answers by adding.."

	Subti	actions	Chec	ks	 Subt	ractions	Ch	ecks
Example	Tens 4 - 3	Ones 2 1	Tens 3 +1 -4	Ones 1 1 2	Tens 2 -1	Ones 8 8	Tens	Ones
	4 -2	3 5			3 -2	•		
	3 - 2	6 6			- 1	0 5		
	4	1 0			3 - 1	0 6		
	5 - 2	3 5			5 - 2	0 5		
ERIC								

"I did these subtractions and checked the answer by addition."

Tens	Ones
4	5
- 3	2

Tens	Ones
4	0
- 3	8

Tens	Ones
5	D
- 2	0

Tens	Ones
5	ථ
 3	9

Check: Tens		Ones
	Martin Colors Colors Assessed	
	Ì	

Tens	Ones

Tens	Ones

Tens	Ones

Tens	Ones
2	5
 1	3

Tens	Ones

Tens	Ones

"I did these subtractions and checked the answer by addition."

Tens	Ones
4	5
- 2)
<u> </u>	

	Tens	Ones
	4	9
_	2	5

Tens	Ones
8	5
-6	2

Tens	Unes
8	0
-5	9

Check: Tens		Ones
	+	

Tens	<u>Ones</u>

Tens	Ones
7	5
- 3	9

Ones

Tens	Ones
	i

Tens	Ones
-	

"I did these subtractions and checked the answer by addition."

Tens	Ones
3	3
 2	2

Tens	Ones
4	8
- 2	5

	1 6 113	Olica
	4	7
-	3	8

Check: Tens		Ones
-	+	

Tens	Ones

Tens	Ones

Tens	Ones

Tens	Ones
5	2_
 3	0

Tens	Ones
	}

Tens	Ones

"I did these subtractions and checked the answer by addition."

Tens	Ones
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-2	6

Te	กร	Ones
	5	2
_	4	1

	1 E 113	បអនភ
	7	0
******	3	5

Check: Tens Ones

Ones

Tens	Ones

MATHEMATICIAN:__

"I did the adding or subtracting and checked with the INVERSE OPERATION."

_	TENS	ONES
Eva	4	3
	- 2	
	2	1

TENS	ONES
6	4
+ 1	ξ

TENS	ONES
6	4
-1	8

CHECKS:

TENS	ONES
2	(
+ =	2
4	3

TENS	ONES

TENS	ONES
5	0
+1	5

TENS	ONES
2	3
+ 3	2

TENS	ONES

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MATHEMATICIAN:___

"I did the adding or subtracting and checked with the INVERSE OPERATION."

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TENS	ONES
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- 2	3

TENS	ONES
4	4
+ 3	7

CHECKS:

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MATHEMATICIAN:

"I did the adding or subtracting and checked with the INVERSE OPERATION."

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	4	4

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2	6
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TENS	ONES

MATHEMATICIAN ____

"I did the adding or subtracting and checked with the INVERSE OPERATION."

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TLAS	ONES
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+2	9

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MATHEMATICIAN:_

"I did the adding or subtracting and checked with the INVERSE OPERATION."

TENS	ONES
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+4	7

TENS	ONES
4	7
- ?	7

TENS	ONES
2	1
	6

CHECKS.

TENS	ONES
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+ 1	<i>7</i>

TENS	ONES
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+ 2	2

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"I did these additions and checked the answer by subtraction."

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+ 2	9	9

Hundreds	Tens	Ones
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Hundreds	Tens	Cnes
	8	9
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Check.	Hundreds	Tens	Ones

Hundreds	Tens	Ones

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Tens	Unes
6	7
3	4
	6

Hundreds	Tens	Ones
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+ 3	2	

Hundreds	Tens	Ones
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+ 3	3	9

Check: Hundreds Tens Ones

Hundreds	Tens	Ones
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	j A	

"I did these additions and checked the answer by subtraction."

Hundreds	Tens	Ones
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+2	۶	9

Hundreds	Tens	Ones
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+ 3)	6

Hundreds	Tens	Ones
4	3	2
+ 1	2	8

Check:	Hundreds	Tens	Ones

Hundreds	Tens	Ones
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Hundreds	Tens	Ones

Hundreds	Tens	Ones
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+ 1	8	9

Hundreds	Tens	Ones
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+5	1	7

Hundreds	Tens	Ones
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Check:	Hundreds	Tens	Ones
		Calculated analysis	

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Hundreds	Tens	Ones

"I did these additions and checked the answer by subtraction."

Hundredo	Tens	Ones
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Hundreds	Tens	Ones
	Hundreds	Hundreds Tens

Hundreds	Tens	Ones

Tens	Ones .
	Tens

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+ 2	8	9

Hundreds	Tens	Ones
	2	4
+ 1	0	9

Hundreds	Tens	Ones
	2	3
+ 4	5	6

Hundreds	Tens	Ones
		<u> </u>

Hundreds	Tens	Ones

Hundreds	Tens	Ones

Matematician:_____

"I did these additions and checked the answer by subpraction."

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Hundreds	Tens	Ones
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Mathematician:_____

"I aid these subtractions and checked the answer by addition "

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-	8	9

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Check:	Hundreds	Tens	Ones
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Mathematician:_____

"I did these subtractions and checked the answer by addition."

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- 4	2	5

Check:	Hundreds	Tens	Ones
			

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- 1	0)	4

Hundreds	Tens	Ones
1	0	0
	7	5

Hundreds	Tens	Ones
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Check:	Hundreds	Tens	Ones

Hundreds	Tens	Ones

Hundreds	Tens	Ones

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"I did these subtractions and checked the answer by addition."

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Hundreds	Tens	Ones
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	4	5
	·	

Hundreds	Tens	Ones
	4	4
	8	8

Check:	Hundreds	Tens	Ones
	,		

Hundreds	Tens	Ones

Hundreds	Tens	Ones

Hundreds	Tens	Ones
	2	3
Skeatro	5	6
Mar Abbar .		

Hundreds	Tens	Ones
1	0	5
_ 1	0	2

Hui	ndreds	Tens	Ones
	2	0	0
	l	4	4

Check:

Hundreds	Tens	Ones

Hundreds	Tens	Ones
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Hundreds	Tens	Ones
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	Hundreds	Tens	Ones	Hundreds	Tens (Ones	Hundreds	Tens (Ines
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	2	1	1	2	0	0	3	0	0
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_	- (?)	8	- 1	8	\$	- 2	2	5
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"I did these subtractions and checked the answer by addition."

Mathematician:_____

Mathematician:_	

Number of UNIFIX Links	X Cubes in each link	= Total Number of UNIFIX in each link	Number Sentence
2	2		
2	3		
2	4		
2	5		
2	6		
2	7		
2	8		
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Mathematician;	
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Number of UNIFIX Links	X Cuhes in each link	- Total Number of UNIFIX in each link	Number Sentence
2	10		
3	2		
3	3		
3	4		
3	5		
3	6		
3	7		
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Mathematician:	
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Number of UNIFIX Links	X Corbes in each link	Total Number of UNIFIX in each link	Number Sentence
3	9		
3	10		
4	2		
+	3		
4	4		
4	5		
4	6		
ERIC Translatory Ellic	7		

	hematician:		
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4 4-24		 	

Number of UNIFIX Links	X Cubes in each link	Total Number of UNIFIX in each link	Number Sentence
4	8		
4	9		
4	10		
5	2		
5	3		
5	4		
5	5		
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Mathematician:	
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Number of UNIFIX Links	X Cubes in each link	Total Number of UNIFIX in each link	Number Sentence
5	7		
5	8		
5	9		
5	10		
6	2		
6	3		
6	4		
ERIC	3		· ,

Mathematician:	
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UNIFIX Links	Cubes in each link	Total Number of UNIFIX in each link	Number Sentence
6	6		
6	7		
6	8		
6	9		
6	10		
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7	5		
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Mathematician:	
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Number of UNIFIX Links	X Cubes in each link	Total Number of UNIFIX in each link	Number Sentence
7	7		
7	8		
7	9		
7	10		
8	4		
8	5		
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Number of UNIFIX Links	X Cubes in each link	Total Number of UNIFIX in each link	Number Sentence
8	8		
8	9		
8	10		
9	4		
9	5		
9	6		
9	7		
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Mathematician:	
4 and 4 have needed 4 4 4 5 48 95	

Number of UNIFIX Links	X Cubes in each link	fotal Number of UNIFIX in each link	Number Sentence
9	9		
9	10		
3		24	
2		8	
	4	8	
	5	15	
3		12	
ERIC_		16	

Mathematician:	
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[&]quot;I made squares from tiles. I recorded these on graph paper."

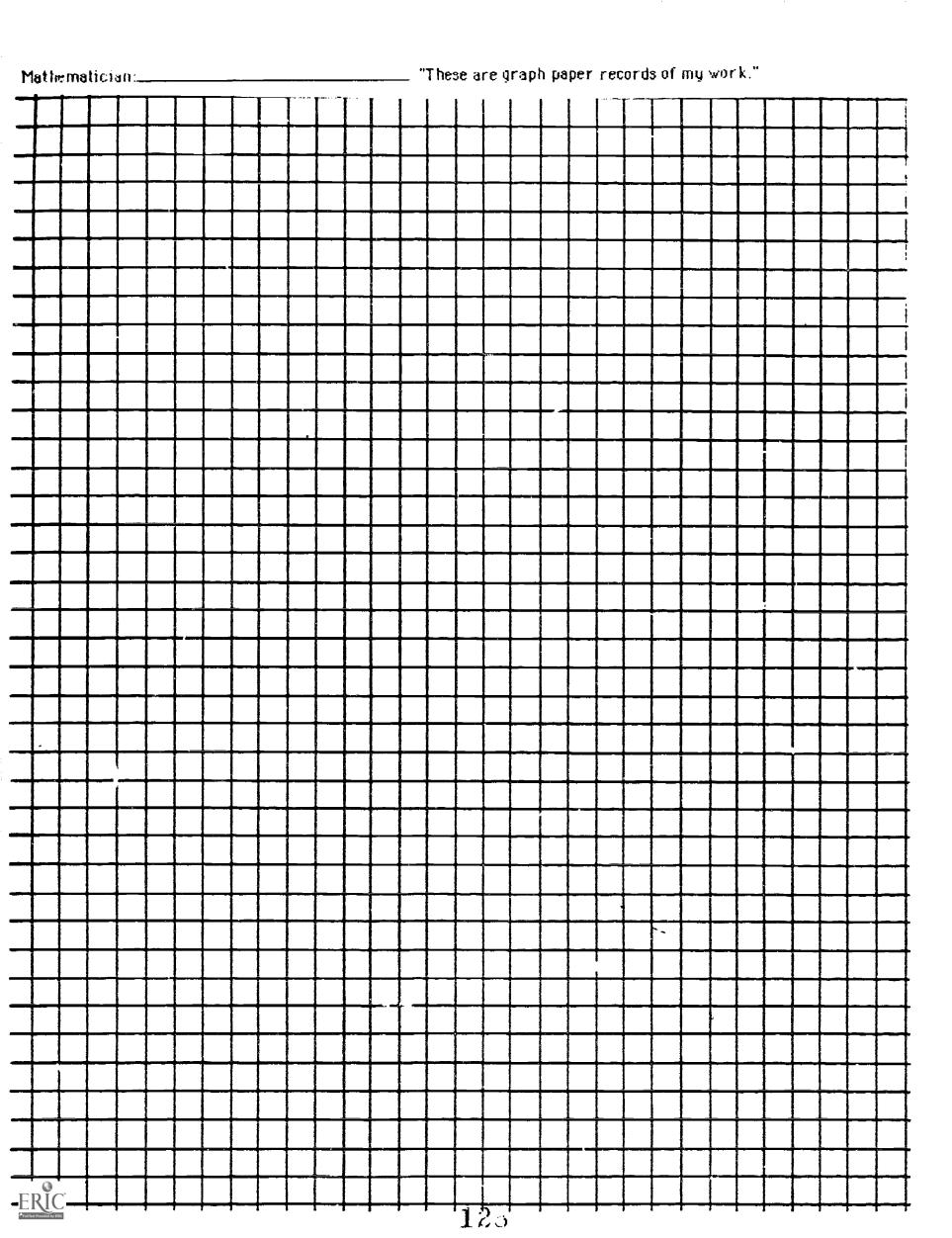
Side of Square	Tile Used	Number Sentence	Area of the Square
Example!			
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"MY RECORD OF MAKING RECTANGLES OUT OF TILES."

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"My Number Sentences for Tile Rectangles."

ROWS >	COLUMNS	= TILES	NUMBER SENTENCES
5	7		
5	8		
5	9		
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6	2		
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9			
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MATHEMATICIAN	
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"My Number Sentences for Tile Rectangles."

ROWS	K COLUMNS	= TILES	NUMBER SENTENCES
4	8		
4	9		
4	10		
5	2		
5	3		
5	4		
5	5		
5	6		
ERIC.			

MATHEMATICIAN:

"My Number Sentences for Tile Rectangles."

ROWS :	X COLUMNS	= TILES	NUMBER SENTENCES
3	9		
3	10		
+	2		
4	3		
4	4		
4	5		
4	6		
4	7		13.;
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MATHEMATICIAN	
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"My Number Sentences for Tile Rectangles."

ROWS 3	COLUMNS	= TILES	NUMBER SENTENCES
2	10		
3	2		
3	3		
2	4		
3	5		
3	6		
3	7		
3	8		
ERIC Pratual resident to ERIC			

MATHEMATICIAN			
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"My Number Sentences for Tile Rectangles."

ROWS	X COLUMNS	= THFS	NUMBER SENTENCES
2	2		
2	3		
2	4		
2	5		
2	6		
2	7		
2	8		
2	9		
ERIC			134

"My Beans and Cups Multiplication Table."

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REANS IN EACH CUP

X	0	1	2	3	4	5	6	7	Ö	9	10
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1											
2										į į	
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MATHEMATICIAN-_____

CUPS USED	X BEANS IN EACH CUP	= TOTAL BEANS USED	NUMBER SENTENCES
7	5		
8		16	
9		18	
3		15	
	6	18	
	7	35	
3		12	
4		20	
	4	20	
6		36	
8		160	
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MATHEMATICIAN:_____

CUPS USED	X BEANS IN EACH CUP	= TOTAL BEANS USED	NUMBER SENTENCES
3		12	
	5	15	
6		12	
4		20	
	6	24	
2		20	
7		21	
	5	25	
	7	28	
3		21	
8		24	
EDIC			

MATHEMATICIAN-

CUPS USED	X BEANS IN EACH CUP	= TOTAL BEANS USED	NUMBER SENTENCES
9	5		
9	6		
9	7		
9	8		
9	9		
9	10		
9	11		
9	12		
ERIC Profit to Provided by effici		135	

CUPS USED		= TOTAL BEANS USED	NUMBER SENTENCES
7	12		
8	4		
8	5		
8	6		
8	7		
8	8		
8	9		
8	10		
8	1)		
8	12		
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CUPS USED	X BEANS IN EACH CUP	= TOTAL BEANS USED	NUMBER SENTENCES
6	10		
6	//		
6	12		
7	4		
7	5		
7	6		
7	7		
7	8		
7	9		
7	10		
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CUPS USED	X BEANS	TOTAL BEANS USED	NUMBER SENTENCES
5	8		
5	9		
5	10		
5	//		
6	4		
6	5		
6	6		
6	7		
6	8		
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CUPS USED	X BEANS IN EACH CUP	= TOTAL BEANS USED	NUMBER SENTENCES
+	6		
4	7		
4	8		
4	9		
4	10		
4	11		
7	12		
5	4		
5	5		
5	6		
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CUPS USED	X BEANS IN EACH CUP	= TOTAL BEANS USED	NUMBER SENTENCES
3	4		
3	5		
3	6		
3	7		
3	8		
3	9		
3	10		
3	11		
3	12		
4	4		
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-	I made rectangles from Borecorded these."	ase Ten O	nes and		
			DTH Dws)	LENGTH (Columns)	AREA (Total Square Units)
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Mathemati	ician:		
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"I made rectangles from Base Ten Ones and recorded these."

ROWS	COLUMNS	AREA

Mathamatician	
Mathematician:_	

"I made these rectangles from base ten ones, entered the number in the table, and made trades to show this as tens and ones."

Rectangle Size Made	TENS	ONES
3 x /2	3	6
2 × 3		
- 6		
3 × 8		
4×2		
5 x 2		
2 × 5		
5 × 9		
4 × 9		

Methematician:	Inthematicia	<u>n:</u>
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'I made these rectangles from base ten ones, entered the number in the table, and made trades to show this as tens and ones."

Rectangle Size Made	TENS	ONES
3 x 9		
4 × 7		
5 × 7		
3 x 9		
3×7		•
4×8		
6 X Z		
61.3		
6 X H	1	

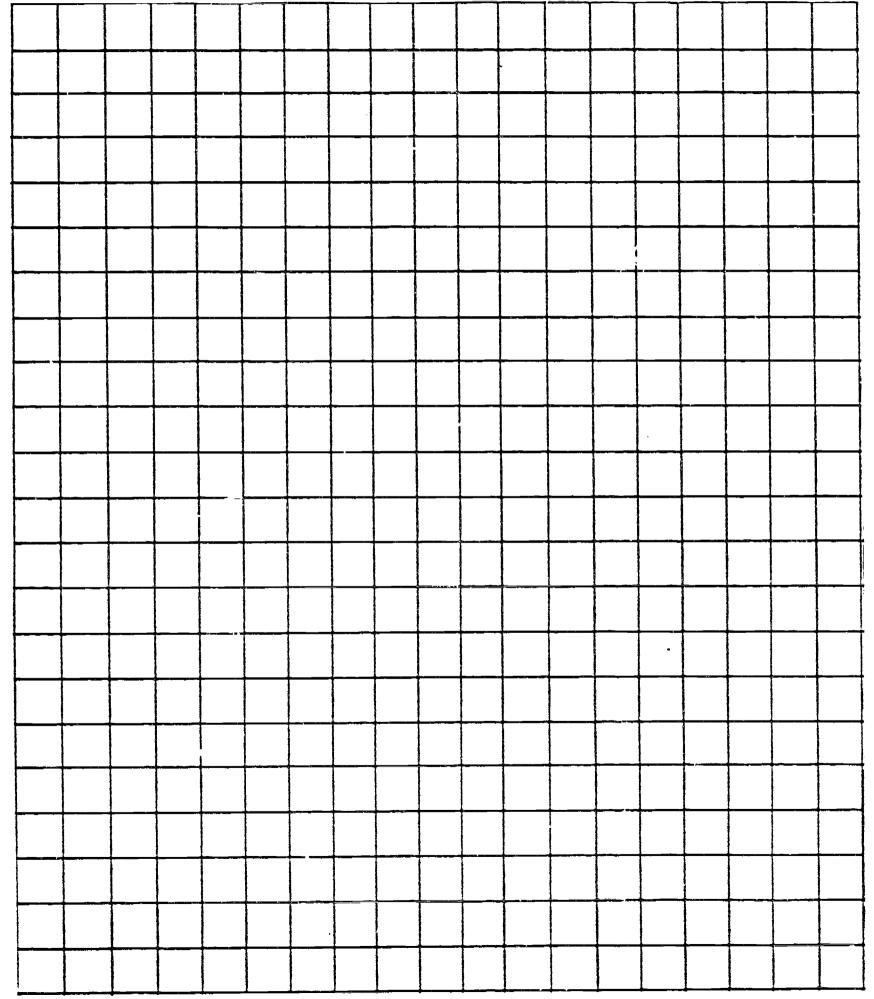
A4 AL A : - :	
Mathematician:_	

[&]quot;I made these rectangles from base ten ones, entered the number in the table, and made trades to show this as tens and ones."

Rectangle Size Made	TENS	ONES
8 X 10		
9 × 7		
9 > 3		
11 × Z		
12 × 4		
5 × 11		
6 × 13		
5 × 6		
7 × 9		

MATHEMATICIAN:	

These are my rectangles made of Base Ten Ones and the Number Sentences for them."





L COLUMNS L

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T I L E S

MATHEMATICIAN:_____

"! made rectangles from ______to complete these number sentences."

$$= 3 \times 1$$

$$= 3 \times 4$$

$$=$$
 3 x 3

7 x 2 = ____

"I made smaller UNIFIX cube links from long UNIFIX cube lengths."

UNIFIX CUBE LENGTH	• UNIFIX LINK • LENGTH	= NUMBER OF LINKS	+ REMAINDER	NUMBER SENTENCE
Example.	2	3	<u></u>	6-2=3
6	3			
6	4.			
4	2			
4	3			
. 5	2			
5	3			
7	2			
7	5)			
ERIC Autor Paris	4	155		

"I made smaller UNIFIX cube links from long UNIFIX cube lengths."

UNIFIX CUBE LENGTH	• UNIFIX LINK • LENGTH	= NUMBER OF LINKS	+ REMAINDER	NUMBER SENTENCE
8	2			
8	(3)			
8	4			
8	5			
9	2			•
9	3			
9	4			
9				
9	6			
ERIC.	2	15.,		

"I made smaller UNIFIX cube links from long UNIFIX cube lengths."

UNIFIX CUBE LENGTH	• UNIFIX LINK • LENGTH	= NUMBER OF LINKS	+ REMAINDER	NUMBER SENTENCE
10	3			
10	i-j-			
10	5			
10	6			
	2			•
. 11	3			
11	+			
12	2			
12	3		•.	
ERIC	4	3		

Mathematician:

"I made rectangles if I could from the tiles."

Tiles -	- Rows	= Columns +	Remainder	Number Sentence
P)				
4				
Example 5	2			5=2x2+1
6				
7				•
8				
9				
10				
ERIC.			٢ ټ ٢	

Mathematician:		
----------------	--	--

"I made rectangles if I could from the tiles."

Tiles	•	Rows	= Columns	+ Remainder	Number Sentence
12					
13					
14					
15					
16					·
17					
12					
19					
20 ERIC				15.7	

Mathematician:	

"I made rectangles if I could from the tiles."

Tiles -	- Rows =	Columns +	Remainder	Number Sentence
21				
22				
スミ				
Prof.				
25				
26				
2.7				
28				
ERIC				

Mathematician:		
----------------	--	--

"I used tiles to complete the open sentence. I then wrote sentences that were related to that one."

OPEN SENTENCE	SAME FACT ANOTHER WAY	2 RELATED SENTENCES
5×4=		
= 5×5		
-5x6		
=6x3		•
-6×4		
6×5=		
6×6 =		
4x9=		
5x8=		
5 X 7 ==	1	

No. 1 to 1	·		
Mathemat	1C18n:	 	

"I used tiles to complete the open sentence. I then wrote sentences that were related to that one."

OPEN SENTENCE	SAME FACT ANOTHER WAY	2 RELATED S	ENTENCES
12 = 344	4×2-12	12-2-4:	12 + 4=3
= 2 < 5			
4×2=			
5 x 2 - []			•
= 3×6			
3×7=			
4×4=			
4×7= []			
- 4x6			
FRIC.	Í		

"Here are pictures of my multiplication showing all partial products."

Side One	Side Two	Picture	Partial Products
EXAMPLE : (10+1)	2		20+2
. 4	3		
	4		
ERIC.	5		

MATHEMAT	ILIAN:	

Here are pictures of my multiplication showing all partial products.

	Side One	Side Two	Picture	Partial Products
		6		
	,	7		
		8		
		9		
ER Full Text Pro-	<u>C</u>		1614	

MATHEMATICIAN:_____

"Here are pictures of my multiplication showing all partial products."

	Side One	Side Two	Picture	Partial Products
(12 (10+2)	2		
-		3		
-	12	+		
-	12	5		
ER	<u>IC</u>		160	

MAIHEMAII	CIAN:	

"Here are pictures of my multiplication showing all partial products."

	Side One	Side Two	Picture	Partial Products
•	12	6		
_	12	7		
	12	8		
	12	9		
ERI Full Text Provided	C.		16.,	

	MAIHEMAIILIAN	
--	---------------	--

There are pictures of my multiplication showing all partial products."

	Side One	Side Two	Picture	Partial Products
	-13	2		
	13	4		
	13	6		
	3	7		
ERI Full Text Provides	C.		16	

MATHEMATICIAN:

There are multiplications showing tens and ones.

Side One	Side Two	Number Sentences
Exonole:		
	<i>i f</i>	
<i>[</i>]		
/ /	Ġ	
	-	
ERIC Martine Provided in 1800	8	

HATHEMATICIAN:_____

"Here are multiplications showing tens and ones."

Side One	Side Two	Number Sentences
	9	
1		
12		
12	9	
ERIC.	7	

MATHEMAT	ician:

There are multiplications showing tens and ones.

Side One	Side Two	Number Sentences
	*	
21		
c.	7	
ز کھی		
	20	
ERIC Particul record to the	7	

HÀ	THEMAT	TCIAN:			

Here are multiplications showing tens and ones.

	Side One	Side Two	Number Sentences
	21	E	
	ć.	<u>.</u>	
	2:1		
•			
	24		
^-	ERIC	6	171

MATHEMATICIAN:_____

There are multiplications showing tens and ones.

Side One	Side Two	Number Sentences
Ø -+	2	
25	2	
er - C		
ERIC Contractor to time	2	

Multiplication Rectangles Made **Products Recorded** X Ones Tens Ones Hundreds Tens x 2 5 Multiplication Poctangles Made **Products Recorded** Ones Tens Hundreds Tens Ones ×2 6 Multiplication Rectangles Made **Products Recorded** X Ones Ones Tens Tens Hundreds x 2 4 17.

"I made rectangles from base ten blocks to do these multiplications."

Mathematician:__

Itiplication	Rectangles Made	Products Recorded			
2 5 2 2	X	Hundreds	Tens	Ones	
Tens Ones 4 1 4	Rectangles Made	Proc		ecorde Ones	
Multiplication Tens Ones 5 5 5	Rectangles Made	Prof		Record	
1					

ultiplication		Rectangles Made	Products Recorded			
ens Ones	×		Hundreds	Tens	Ones	
2 4 ×2 1						
×2 1						
4tiplication			,			
1ultiplication	×	Rectangles Made	Proc	iucts F	lecorde:	
Tens Ones	 -		Hundreds -	Tens	Ones	
X 2 5						
Multiplication		Rectangles Made	Pre	oducts	Record	
Tens Ones	<u>:</u>	×	Hundred	s Ten	s Ones	
2 3 × 2 4						
i		•				

Multiplication	Rectangles Made	Products Recorded
Tens Ones	×	Hundreds Tens Ones
Multiplication Tens Ones 1 6 x 2 1	Rectangles Made	Products Recorder Hundreds Tens Ones
Multiplication Tens Ones	Rectangles Made	Products Records Hundreds Tens Ones
1 7 × 2 2		ndidicus lens unes

x	1	2	3	4	5	6	7	8	9	10
1										
2										
3							-			
1										
5										
h										
7										
8										
9										
10										

"! worked these multiplications by building rectangles with base ten blocks."

Side One	Side Two	Rectangle	Number Sentence
	15		
21	18		
2.1	2		
12	24		
15	7.5		
22	22		
16	2-4		
13	2.5		
ERIC / 2	28.	375	

Mathemat	ician-			
* 4 CK C 11 CK 11 1 FT C		 	 	

"! worked these multiplications by building rectangles with base ten blocks."

Side One	Side Two	Rectangle	Number Sentence
14			
14	15		
14	16	the control of the co	
14	17		
14	18		
14	.19		
1-1	2)		
14	21		
ERIC.		177.7	

Mathematician:

"! worked these multiplications by building rectangles with base ten blocks."

Side One	Side Two	Rectangle	Number Sentence
12	25	edes quez elementes de la companya del la companya del la companya de la companya	
13	13	The state and the same and the	
13	14	and the desired was seen and the desired was t	
13	15	ALTS des all-bases one Characteristics	
13	16	And the same and t	
13	17		
13	18		
13.	19		
ERIC Product residenty (IC)	20	107	

Mathematician:_____

"! worked these multiplications by building rectangles with base ten blocks."

Side One	Side Two	Rectangle	Number Sentence
[10+2]	2	26	13 × 2 = 26
13	3		
13	4		
12	5		
. 13	6		
13	7		
13	Ç		
13	9		
ERIC.	2	1881	

Mathematician:_____

"! worked these multiplications by building rectangles with base ten blocks."

Side One	Side Two	Rectangle	Numb - Sentence
14			
14	1		
14	5		
1 +	6		
14	7		
14	8		
14	9	**	
17	2		
ERIC.	3	15.,	

Mathamatician.	1
Mathematician:	

"I worked these multiplications by building rectangles with base ten blocks."

	Side One	Side Two	Rectangle	Number Sentence
	17	4		
	17	()		
	17	< 9		
	17	7		
	17	8		
	17	9		
	20	2		
_	20	3		
ERIO	20	+.	183	

Mathamatician.	
Mathematician:	

"I worked these multiplications by building rectangles with base ten blocks."

Side One	Side Two	Rectangle	Number Sentence
20	5		
20	6		
20			
20	E Company of the Comp		
20	9		
22	2		
22	3		
22	4		
ERIC Z Z	5.	1.8 :	

Mathematic	isn:
	· · · · · · · · · · · · · · · · · · ·

"I worked these multiplications by building rectangles with base ten blocks."

Side One	Side Two	Rectangle	Number Sentence
1 1	20	e deservation and the control of the	
12	12		
12	13		
12	14		
12	15		
12	16		
12	; 7		
12	12	The state of the s	
ERIC 12	19.	185	

Mathemal	ician	
210 711011101		

"! worked these multiplications by building rectangles with base ten blocks."

Side One	Side Two	Rectangle	Number Sentence
EXAMPLE: [10+1]	(10+1)	121	11 × 11 = 121
/ 1	12	The control to the same and the control to the cont	
_	13		
	1 1-1-		
	15	Control of the Contro	
11	16		
11	17		
	18		
ERIC.	19.	180,	

Mathematician:	
	_

"I worked these multiplications by building rectangles with base ten blocks."

	Side One	Side Two	Rectangle	Number Sentence
EY	I 2)	130	13×10 = 130
_	14	10		
	15	10	· California como color como color como color como color como color como color como color como color como color como color col	
	16	10		
	17	10		
	18	10		
	19	10		
agreement.	20	10		
ERIO	c 2 1	10.	157	

SIDE ONE 5 į D E W 0 165

Mathematician:	
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"Here are multiplications done by making rectangles with base ten blocks."

Picture	Computation Form	Length x width = area
Example:	Tens Ones	13 x 4 = 52
	Tens Ones	
FRIC	Tens Ones	

Mathematician:

"Here are multiplications done by making rectangles with base ten blocks."

Picture	Computation Form	Length x width = area
	Tens Ones	
	+	
· · · · · · · · · · · · · · · · · · ·	Tens Ones	
	+	
	Tens Ones	
RIC.	المن المناس المناس المناس المناس المناس المناس المناس المناس المناس المناس المناس المناس المناس المناس المناس ا	

Computation Given	Picture of Multiplication	Partice and	al Pro Answe	
16 ×21		Hundreds +	Teno	Onec
X 3 1		Hundreds +	Tens	Ones

Mathematician:____ "I worked the multiplications by using base ten blocks, drew pictures of the base ten materials used." Computation Given Picture of Multiplication **Partial Products** and Answers 23 Hundreds Teno Ones ×40 + 34 x22 Hundreds Tens Ones]:1.,

Computation Given	Picture of Multiplication	Partial Products and Answers		
34 x21		Hundreds	Tens	Onec
23 x27	AND AND AND AND AND AND AND AND AND AND	l lundreds	Tens	- Unes
		*		

Mathamai	linian.		
natususa	tician:	 	

From the base ten blocks given, I built the largest rectangle I could inside the outline."

Base Ten Blocks	Outline	
Hundreds Tens Ones		
6 5		
	1 /	
		:
		l I
		4 5
•		(
9 4		
	1	
FRIC		



Mathematici	តពៈ <u> </u>		

"From the base ten blocks given, I built the largest rectangle I could inside the outline."

Base Ter	Block	KS	Outline	
Hundreds	Tens	Ones		
1	3	7		
			I	
				eren, commence de la
•				AND AND AND AND AND AND AND AND AND AND
	Ä	9		·
	ŕ	,	· 1	
				C :
				Windows .
				1
FRIC				1

MATHEMATICIAN:_____

.1 1

I Wrote number sentences to snow this.						
Beans Used	Beans in Each Cup	Cups Used	Number Sentence			
EXAMPLE!	2	3	7:2=3RI			
8	2	4	8 ÷ 2 = 4			
7	3					
7	4					
7	5					
8	3					
E						
2						
. 5	6					
ERIC	2					

MATHEMA	TICIAN-		

i wrote number sentences to snow this.				
Beans Used	Beans in Each Cup	Cups Used	Number Sentence	
24	6			
24	7			
24	8			
7	10			
24	12			
24	13			
25	4			
25	5			
25	6			
26	2.	197		

MA	THEM	ATICIAN:	 	

i minte lidilipei selitelites tu silom tilis.				
Beans Used	Beans in Each Cup	Cups Used	Number Sentence	
22	4			
22	10			
2.2				
2 .7				
23	2			
23	3			
24	2			
- +				
24	4			
ric 2 4	5			

MATHEMATICIAN:	
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i widte number sentences to snow this.			
Beans Used	Beans in Each Cup	Cups Used	Number Sentence
20	12		
21	2		
21	3		
21	4		
21	5		
21	6		
21	7		
21	8		
22	2		
2 Z	3:)	S.J.

	. =	
м,	ATHEMATICIAN <u>-</u>	
:	M [[k,] M L, M T	

i wide number sentences to snow this.			
Beans Used	Beans in Each Cup	Cups Used	Number Sentence
20	2		
20	3		
20	4		
20	حسن ا		
20	6		
20	7		
20	Σ		
20	9		
20	10		
20	11.	2	J · 1

M	LTUEMATICIAN	_		
	ATHEMATICIAN	<u> </u>		

i miote i	ndiniber sence	HICES LO SHUT	CHII D.
Beans Used	Beans in Each Cup	Cups Used	Number Sentence
18	7		
18	8		
18	9		
18	10		
19	2		
19	3		
19	5		
19	8		
19	9		
ERIC G	10	2	

MATHEMATICIAN:_____

Beans Used	Beans in Each Cup	Cups Used	Number Sentence
16	8	ì	
16	10		
17	2		
17			
	7		
18	2		
18	3		
18	+		
18	:5		
ERIC / S	6	6.	U.,

MATHEMATICIAN:_____

i mote i	t wrote number sentences to snow this.				
Beans Used	Beans in Each Cup	Cups Used	Number Sentence		
14	3				
14	7				
15	3				
15	4				
15	5				
15	6				
16	2				
16	3				
16	4				
ERIC 16	5	20			

MATHEMA'	TICIAN:	

Beans Used	Beans in Each Cup	Cups Used	Number Sentence
12	3		
12	4		
12	2		
12	6		
13	3		
13	4		
13	5		
13	6		
13	7		
ERIC H	2	2	

NA	ATHEMATICIA	1-	
	4	ŧ	

i wrote	I Wrote number sentences to snow this.					
Beans Used	Beans in Each Cup	Cups Used	Number Sentence			
10	7					
10	8					
10	9					
	Z					
	3					
	4	·				
	5					
	6					
	7					
ERIC Problem Products (BIC)	8	20				

MATHEMATICIAN:_____

i mi ote lighiber selitelices to show this.					
Beans Used	Beans in Each Cup	Cups Used	Number Sentence		
9	3				
9	4				
9	5				
9	6				
9	7				
10	2		·		
10	3				
10	4				
10	5				
ERIC O	6	20%			

MATHEMATICIAN:______

"I used ______to work these."

MATHEMATICIAN-_____

"! used ______to work these."

5	9

MATHEMATICIAN

to work these."

MATHEMATICIAN:_____

"I used ______te work these."

MATHEMATICIAN:

Base Ten Materials	Side One	Siae Two	Number Sentences
Example:		00000	27-3 = 9
	00000		
ERIC	2	<u> </u>	

TAM	HEMAT	TICIAN:		
1 1 2 3 1			 	

Base Ten Materials	Side One	Side Two	Number Sentences
	•		

MATHEMATICIAN:	
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Base Ten Materials	Side One	Side Two	Number Sentences
	0.00		
	四回回日日		
Militius Million			
ERIC	2 %	•	

HATH	EMATIC	IAN:	 	_

Base Ten Materials	Side One	Side Two	Number Sentences
Tilling Tilling			
	0000		
	שט		
		A STATE OF THE STA	
Militai			
Milling			
ERIC ERIC	21	· 1	
A Full Task Provided by URIC.	1	i	i e

MITHERITALITICS AND	
MATHEMATICIAN:	

Base Ten Materials	Side One	Side Two	Number Sentences
	回回		
CO CO MARKETO		回山一	
	0000		
	D FO		
		团山田	
CO AMERICA			
CHARLES CHARLES	DAD		
ERIC U (U A)	(I) (I) (I)	2 ()	

MATHEMAT	ician:		

Base Ten Materials	Side One	Side Two	Number Sentences
	田田道		
MARIAN W			
THINING THE PARTY OF THE PARTY	į.	· ,	

MATHEMATICIAN:

"I used Base Ten blocks and I traded tens for ones when I had to in order to divide."

Base Ten Moterials	Side One	Side Two	Number Sentences
	回回点		
		团团团团	
	OD TO		
	DI JO		

Base Ten Blocks to be used	Side One	Side Two	Number Sentence
		3	34:11 = .3 R1
17100 CARRED CAR	日日		
	DE TO		
ASAATATATATATATATATATATATATATATATATATAT		215	

Base Ten Blocks to be used	Side One	Side Two	Number Sentence
	Mille		
	THITHL.		
ERIC LA CALL	en de de de de de de de de de de de de de	213	

MATHEMATICIAN:	

Base Ten Blocks to be used	Side One	Side Two	Number Sentence
		229	

MATHEMATICIAN:	
· · · · · · · · · · · · · · · · · · ·	

Base Ten Blacks to be used	Side One	Side Two	Number Sentence
		221	

MATHEMATICIAN:	
• • • • •	

Base Ten Blocks to be used	Side One	Side Two	Number Sentence
			·
	Thillie 4.7		
		22.,	

MATHEMATICIAN:	
----------------	--

rue neze t	en blucks sno	TT 11.	
Base Ten Blocks to be used	Side One	Side Two	Number Sentence
		225	
Fruit has traveled by ETIC			

M	THEM	ATICIAN	<u> </u>	
			. — — — — — — — — — — — — — — — — — — —	

"i worked divisions by making rectangles with base ten blocks."

Rectangle Pictures	Computation Form	Rectangle Picture	Computation Form
Example.	12 58 10		
ERIC.		27.4	

MATHEMAT	ICIAN:		

"I worked divisions by making rectangles with base ten blocks."

Rectangle Pictures	Computation Form	Rectangle Picture	Computation Form
ERIC.		225	

MATHEMA	ATICIAN-		

"I worked divisions by making rectangles with base ten blocks."

Rectangle Pictures	Computation Form	Rectangle Picture	Computation Form
ERIC PATRICE TORONOLOGY ETTE		225	

MATHEMAT	TETAN		
· · · · · · · · · · · · · · · · · · ·			

Number of Tiles	Largest Rectangles made	Olher Rectangles made	Number Sentences
Example.	2 x 4 8 x 1	2 x 2	8 = 2 x 4 8 = 8 x 1 3 = 2 (2 x 2)
9			
10			
11			
12			
13			
14		····	
15 ERIC		227	

MATHEMAT	ICIAN-		

Number of Tiles	Largest Rectangles	Other Rectangles	Number Sentences
	made	made	
16			
17			
18			
19			
20			
21			
er ok			
ERIC MALERICATION INC.		2.	

MATHEMAT	ICIAN:_		
HAIREHAI	ILIMI		

Number of Tiles	Largest Rectangles	Other Rectangles	Number Sentences
	made	made	
24			
25			
26			
c- 7			
e e			
30			
ERIC.		225	

TAM	HEMAT	ICIAN:_		

45 I	Courd.		
Number of Tiles	Largest Rectangles	Other Rectangles	Number Sentences
	made	made	
Francis	1×3	1 × 2	3=1×3 3-1×2 +1 3=3(*×1)
3		: ×	3 = 3(1×1)
1+			
5			
6			
7			
<i>(</i> ~			
9			
/() ERIC		25.9	

IIM I IIL IIM I I CIMII.	MATHEMATICIAN:	
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Number of Tiles	Largest Rectangles	Other Rectangles	Number Sentences
	made	made	
11			
12			
13			
14			
15			
16			
17			
ERIC.		23;	

MATHEMATICIAN:	
----------------	--

Number of Tiles	Largest Rectangles	Other Rect an gles	Number Sentences
	made	made	
19			
20			
21			
25			
23			
0.11		-	
25			
26 ERIC		2.3.5	

	MATHEMAT	ICIAN:
--	----------	--------

Number of Tiles	Largest Rectangles made	Other Rectangles made	Number Sentences
)7			
22			
30			
31			
32			
3 3			
34 ERIC		235	

MATHEMATICIAN:	
----------------	--

Number of Tiles	Largest Reclangles made	Other Rectangles made	Number Sentences
35			
36			
37			

. 40			
7//			
ERIC PRINTED FUNDAMENT PROPERTY AND ADMINISTRATION OF THE PROPERTY		234	

MENU F E. 1 HARRY'S DESERT INN Ouarter Pounder.....\$ 1.39 with cheese...... 1.69 Harry's Special......\$ 2.24 Hot Ham 'n' Cheese...... 1.83 Rnast Beef......\$ 1.89 Bagels....\$ (•) Cheese.....\$.69 Lettuce.....\$.10 Bacon Burger...... \$ 1.79 Apple Turnover.....\$.69 **Soft Drinks:** Large.....\$.75 Milk: Large...... \$.60 Y Small......\$.45 Milk Shakes...... 1.29 Malted Milks...... 1.39 Ice Cream Bars.....\$ 9 Ice Cream Cones: One scoop......\$.60 Two Scoops...... \$.89 Super Cones.....\$ 1.19

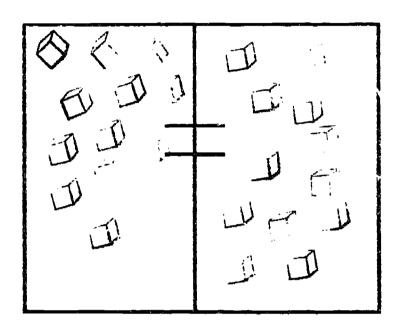
ERIC Full Text Provided by ERIC

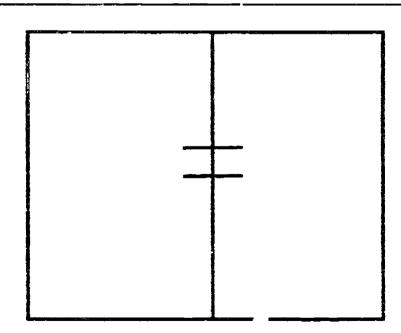
A

"I found the	e cost of these orders at Harry's Deser	t Inn."
ORDER 1:		
One (Quarter Pounder with cheese, and	
One l	arge Soft drink, and	Total
One (Apple turnover	cost: _
ORDER 2:		
One	Harry's Special, and	
0ne	Malted Milk, and	Total
One	Apple turnover	cost:
RDER 3:		
Two	o Roast Beef, and	
Two	small Milk, and	Total
Two	o, two-scoop ice cream cones	cost: .
ORDER 4:		
_	Dian in an annual market annual annual annual annual annual annual annual annual annual annual annual annual a	Total
	Six ice cream bars, and	cost: .
İ	Гшө Super cones	
ORDER 5:		
7	Three Bagels with cheese, and	Total
	Three Milk Shakes, and	Total cost: .
•	Two one-scoop cones, and	£U51
;	One ice cream bar	
ORDER 6:		
	One Bagel with tomatoes, and	_
	One Apple turnover, and	Total
	One Large Milk	cost: .



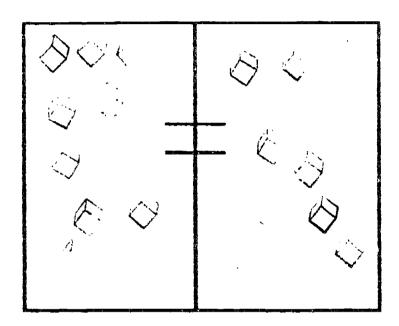
Mathematician:	

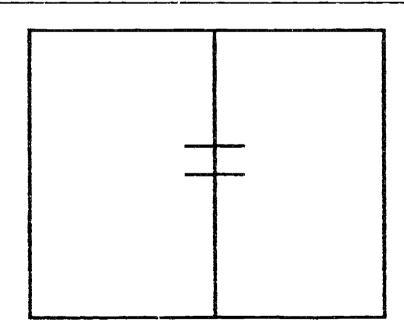




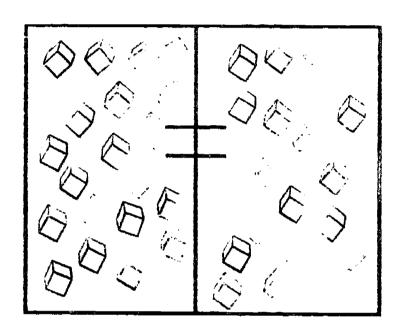


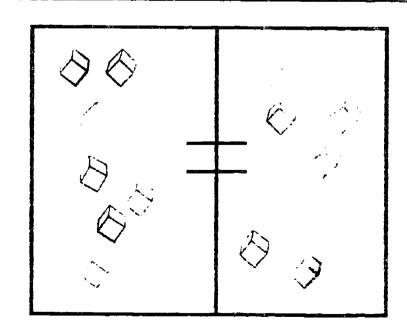
Mathematician:	 	



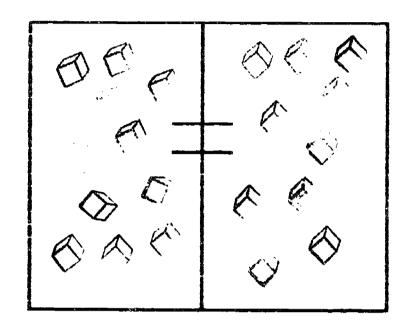


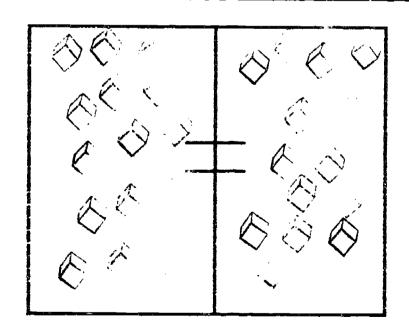
Mathematician:_





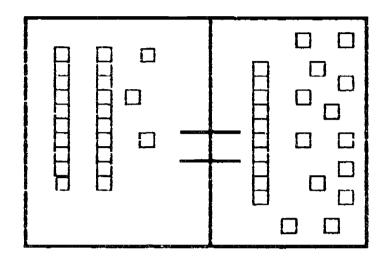
Mathematician:____

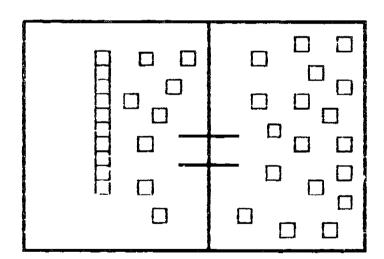




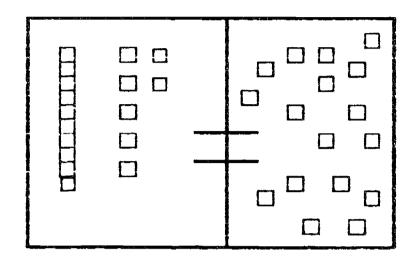
Mathematician:_____

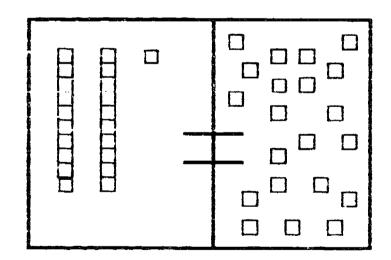






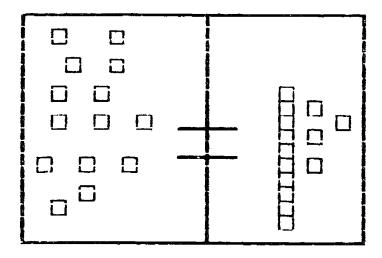
Mothematician:_____

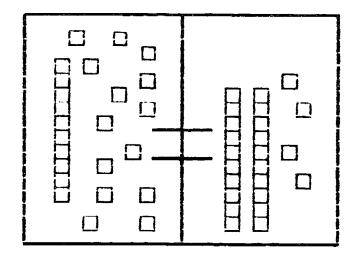




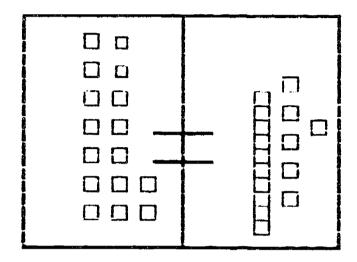


"I arronged the equality boards as shown, grouped the ONES on the LEFT side in different ways and wrote the number sentences."

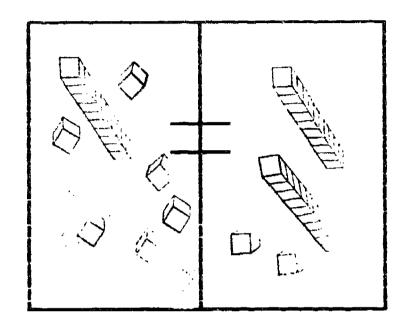


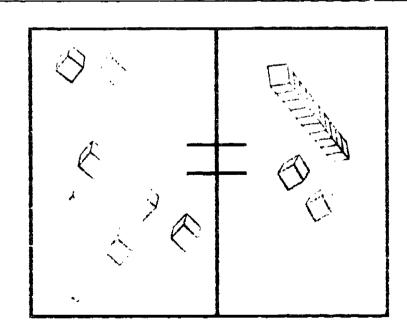


"I arranged the equality boards as shown, grouped the ONES on the LEFT side in different ways and wrote the number sentences."

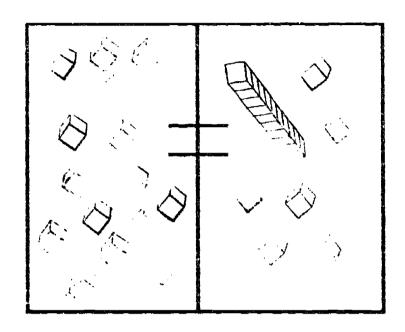


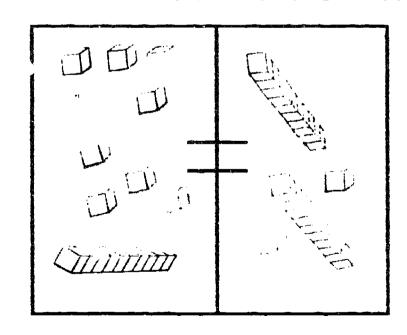
Mothematician:_____





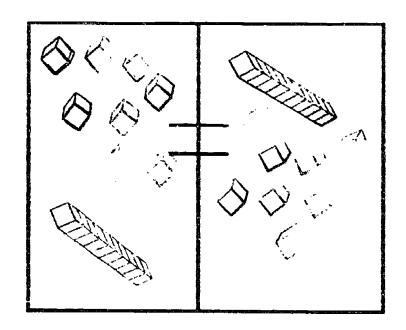
Mathematician:_____

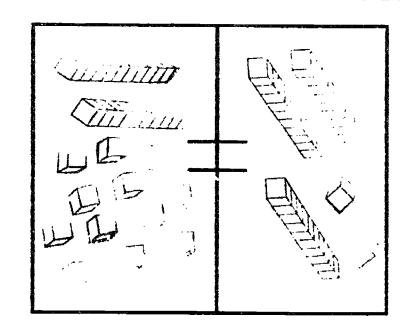




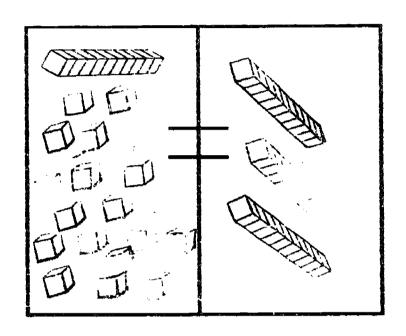


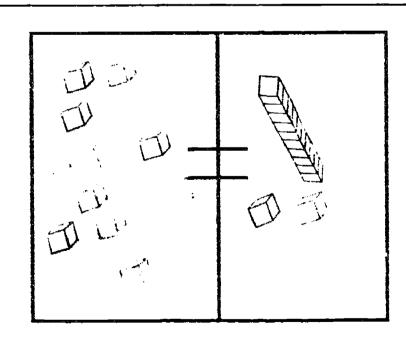
Mathematician:





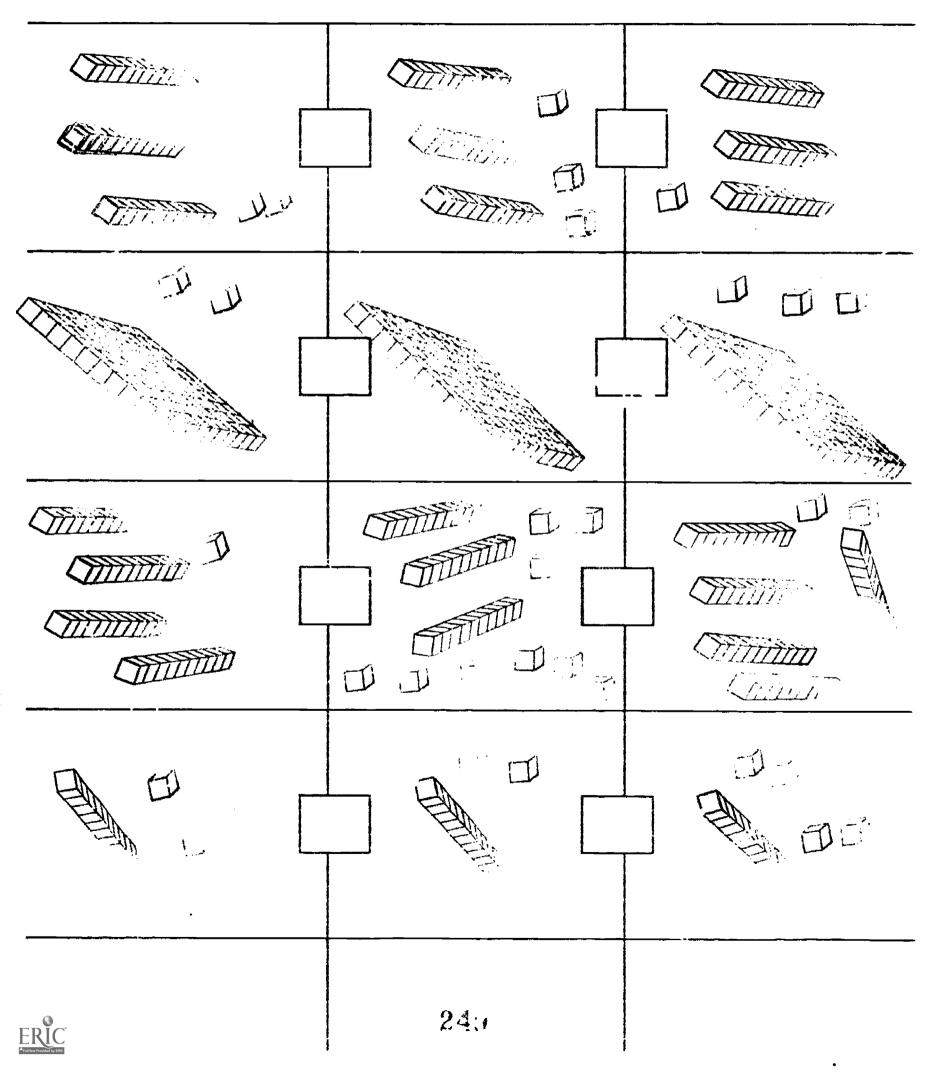






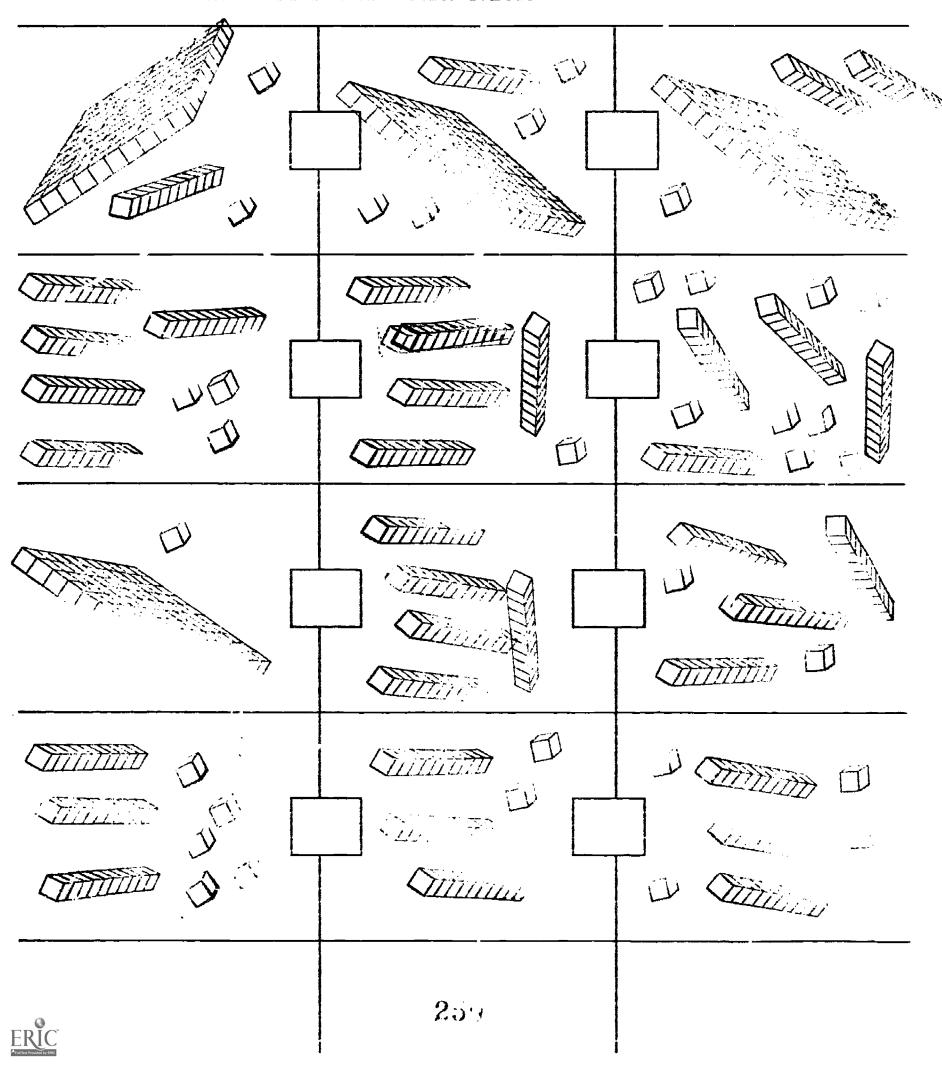
Mathematician:			
* * * * * * * * * * * * * * * * * * *	 		

"I put the '<' and '>' signs between the base ten numbers to show their sizes."



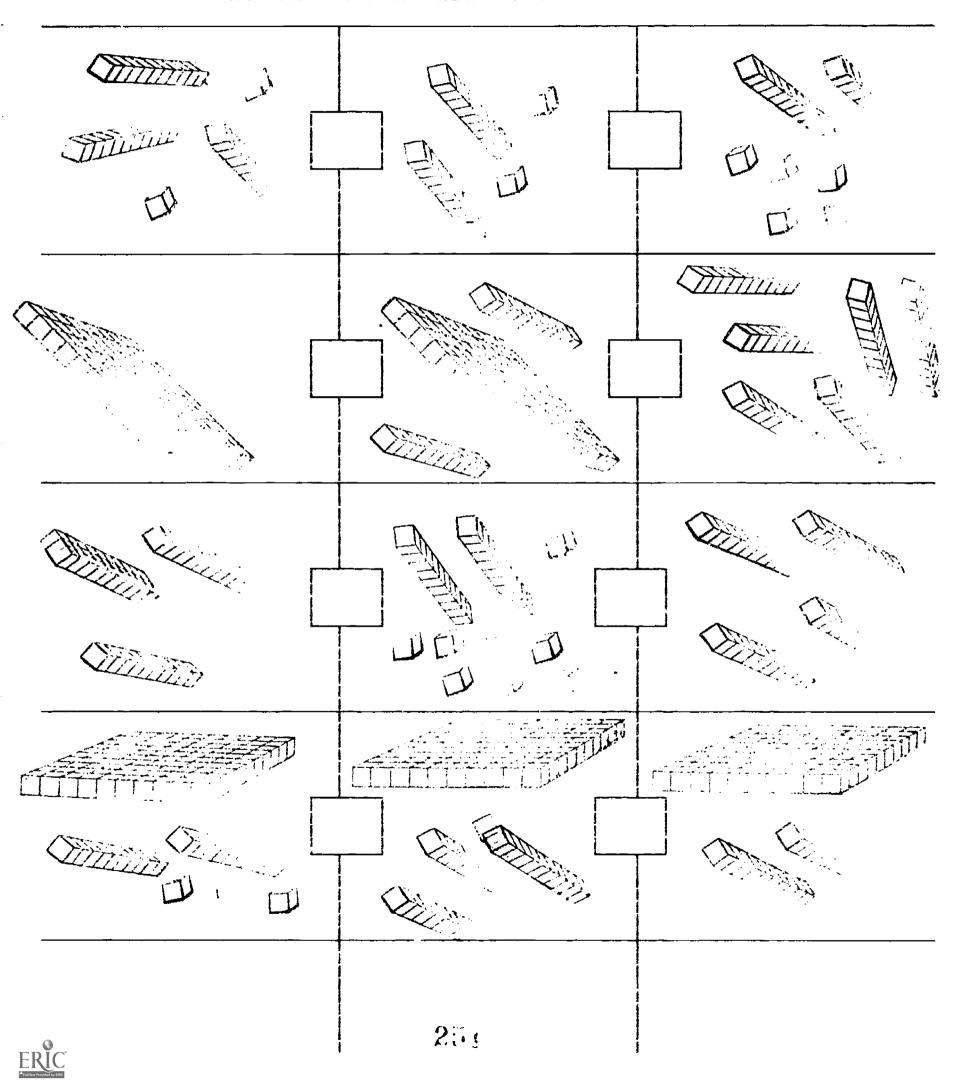
Mathematician:

"I put the '<' and '>' signs between the base ten numbers to show their sizes."



Ma	thematic	cian .		_	

"I put the '<' and '>' signs between the base ten numbers to show their sizes."



Mathematician:		_	
	·	 •	

"I made tiles arrangements to show two numbers and compared them. I wrote a number sentence using "<" to show this."

Number Words	Tile Pictures	Numerals
Example:		
Four < Six		4 < 6
	adjustance outs Codes	
ERIC. *Fulltast Provided by 1970.	25.,	

Mathematicion:			
*For each pair of numbers	shown,	1 finished	the section.
l used the "<" sign!"			

Numerals		Tile Pictures	3	Number W	ords
14	16				
				Twenty	Sixteen
ERIC THOMAS IN THE STATE OF THE		253			

		4N:	***	
"I buil	t th	ese tables by using a number key,		
and	Ξ	many times.	+	

Number Entered	Number of Times = used	Display	Number Sentence
Example	4	5	+×2=8
· ·			
2	6		
<u> </u>	7		
2	£		
2	9		
2	10		
2			
2	1./		
2	5		
2	6		
ERIC 3	7	254	

MATHEMATIC					
and =	hese tables many	by using e times."	number	key	+

Number Entered	Number of Times = used	Display	Number Sentence
3	ج		
3	. 9		
3	15		
4	2		
4	2		
2	:+		
4	E		
4	6		
	7		
4	7		
4	9		
ERIC 4	10	255	

MATHEMATICIAN		
	tables by using a number key, many times.	+

Number Entered	Number of Times = used	Display	Number Sentence
5	2		
<u>ن</u>			
5			
	· (
*			
E	7		
6	2		
	3		
6	• •		
ERIC G	1.	250	

"Here are some rules! discovered for calculator patterns."

Calculator Pattern Example:	Rule
1, 2, 3, 4 , 5 , 6	+ 1
2, 4, 6,,	
3, , 9,,	+ 3
10	+ 5
12, 15, 18,	
20, 40, 60,	
10, 16, 22,	
8. 15,	+ 7
9, 11, 13,	
10, 8, 6,	
20, 16,	- 4

Mathematician:	
----------------	--

"I made base ten numbers and displayed them on the calculator."

Dase Ten Blocks Used

Buttons Pushed

Hundreds	Tens	Ones	First	Next	Next
	4	3	4	3	
			5	(2)	
1	0	4			
	1		(2)	0	1
4	2	3			
•	1	С			
			4	(<u>o</u>)	(<u>o</u>)
2	3	1			
1	2	8	233		



Mathematician:

This	is	mij	record	01	playing	60FSS	MY	RIII	F .	30 ,
------	----	-----	--------	----	---------	-------	----	------	-----	-------------

l n	Out		In	Out	
		Rule:			Rule:
ln	Out		in	Out	
,		Rule:			Rule:
in	Dul		ln	Out	
		Rule:			Rule:
in	Out		In	Out	
the track and they have		Rule:			Rule:
RIC PROJECT SERIO			250		

MATHEMATICIAN: ---

Geoboard	Alike?	Different?
•		
2		
3		
4		
5		
6 ERIC Particular resolution for the	26.4	

MATHEMATICIAN: ----

Geoboard	Alike?	Different?
7		
8		
9		
10		
11		
12 ERIC	263	

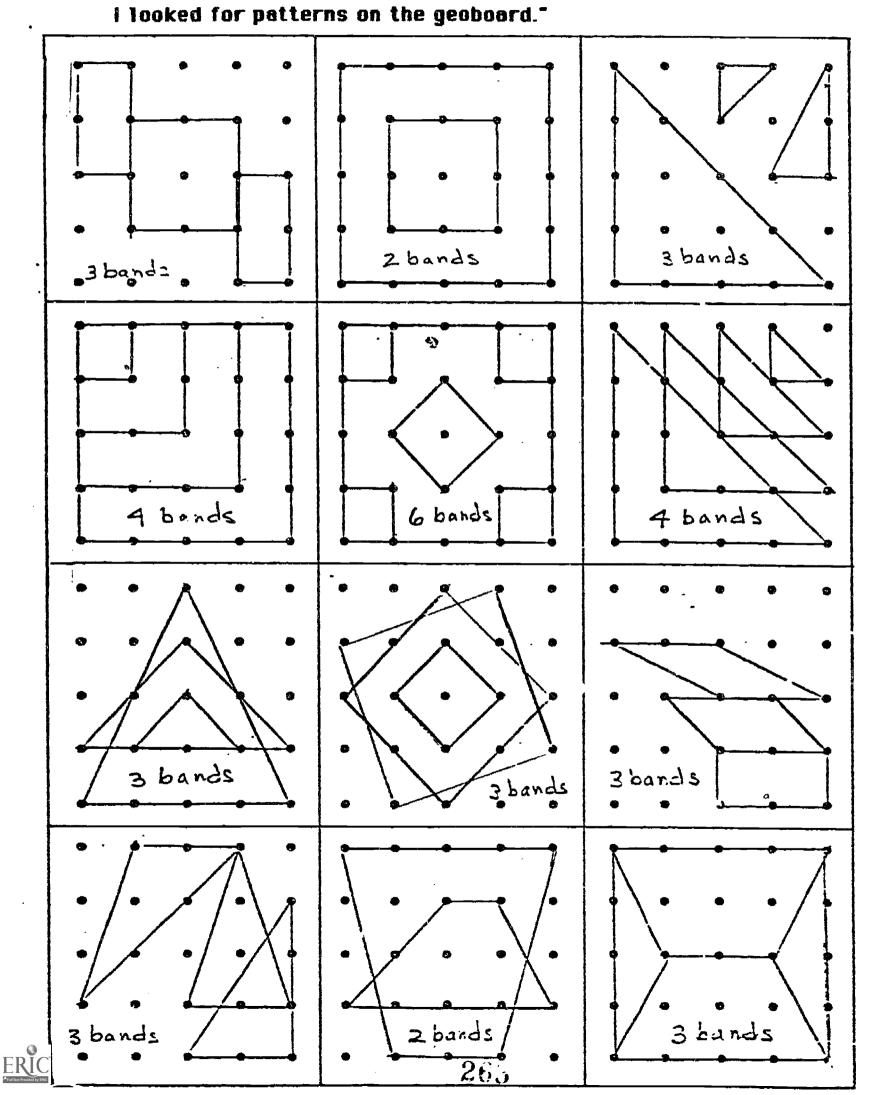
Mathematician:	
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"i made these shapes on the geoboard and saw how they were alike and different."

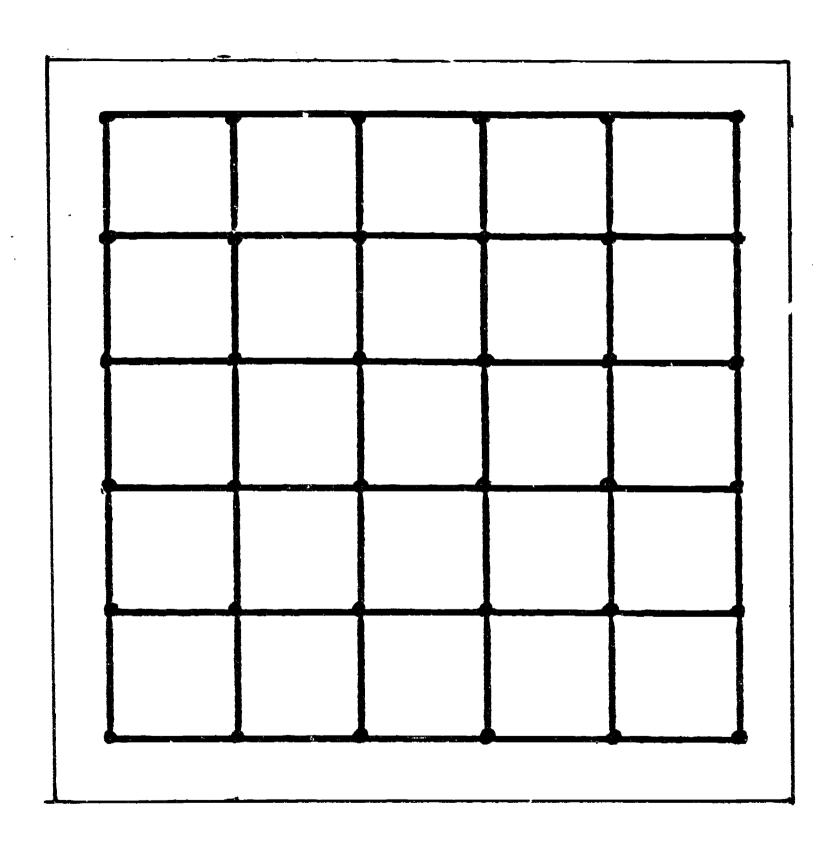
	2	3
• • • •		
	•	
		• • • •
4	5	6
• • •		• • • •
• • • •	• • •	
7	8	9
		• • •
		• •
		.//
10		12-
• • •		• • •
		• •
	20:	

Mathematician:	

"I used different color bands to make these.

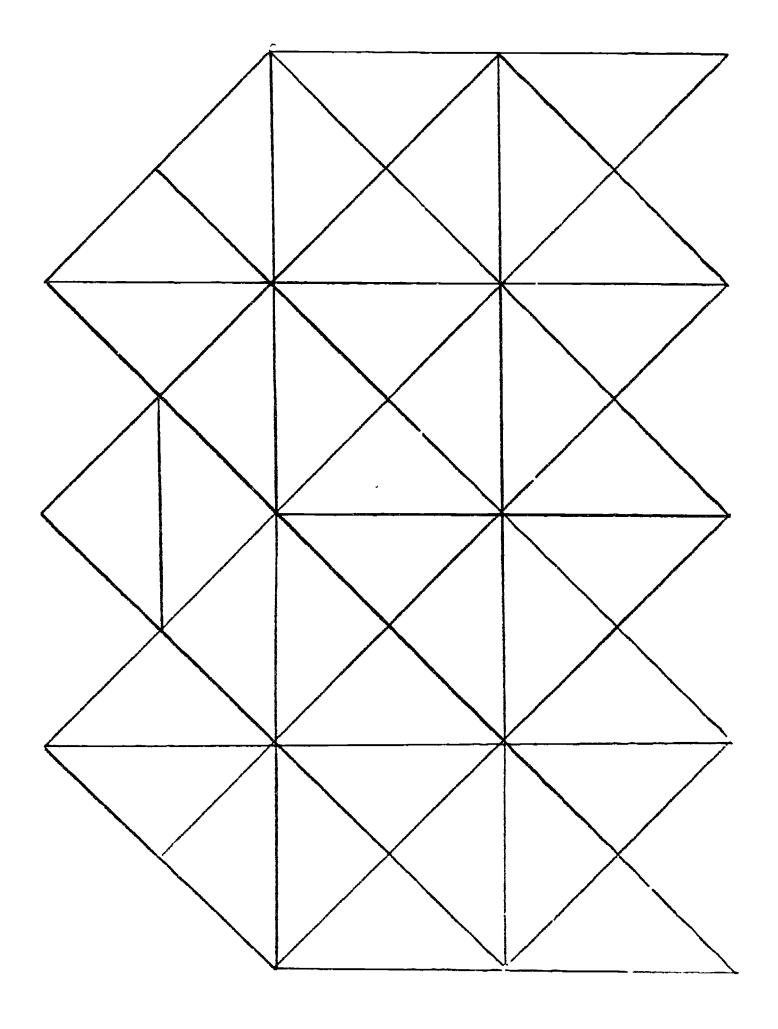


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AFull Text Provided by ERIC									AU	*							



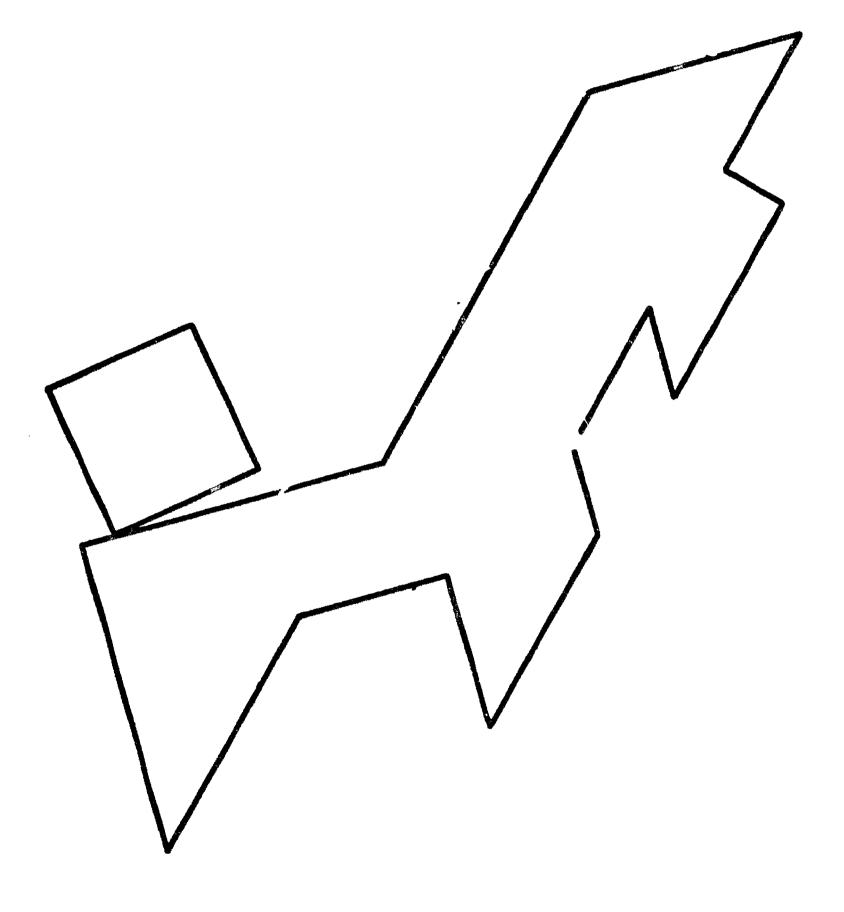


TANGRAM PROBLEM GENERATOR

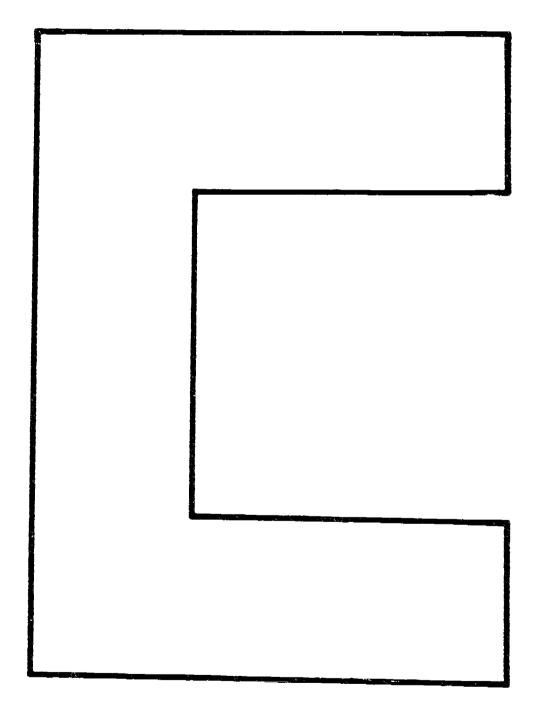




"I worked the Tengram problems and traced to show where the pieces fit."

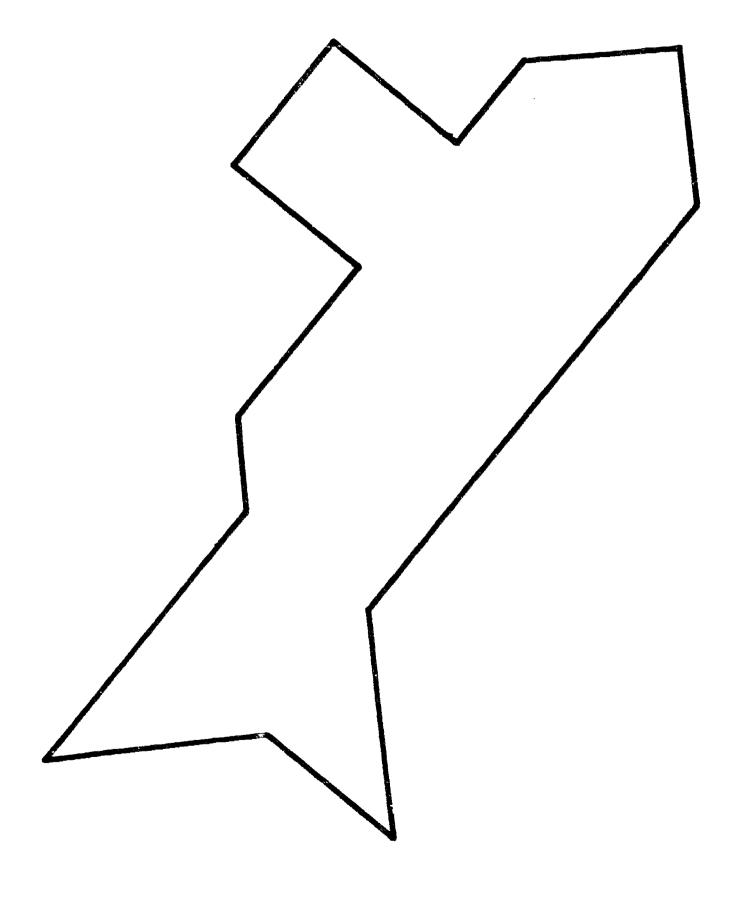


"I worked the Tangram problems and traced to show where the pieces fit."

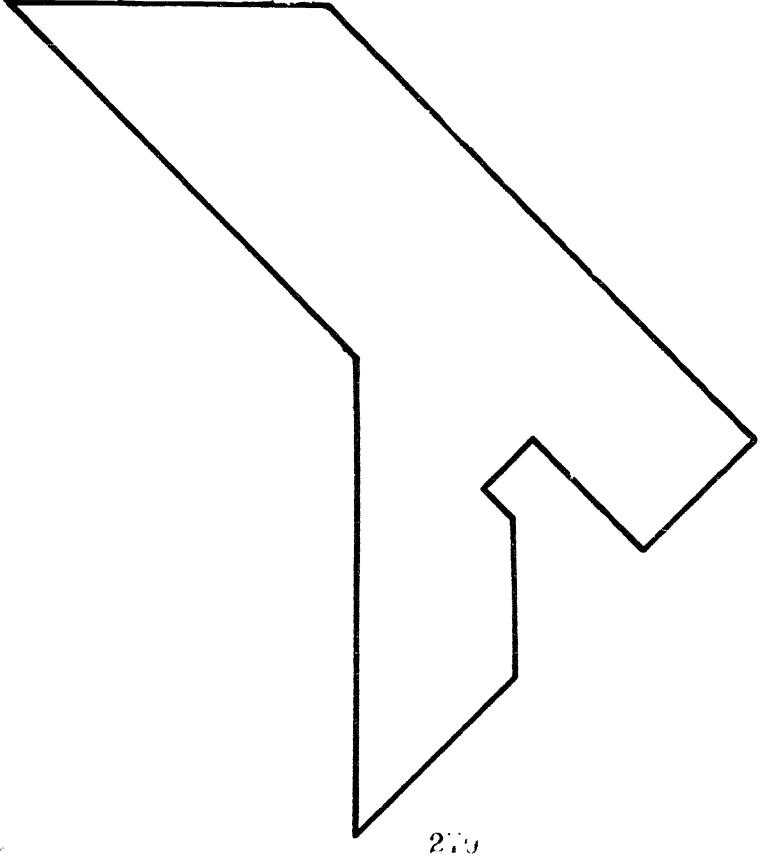




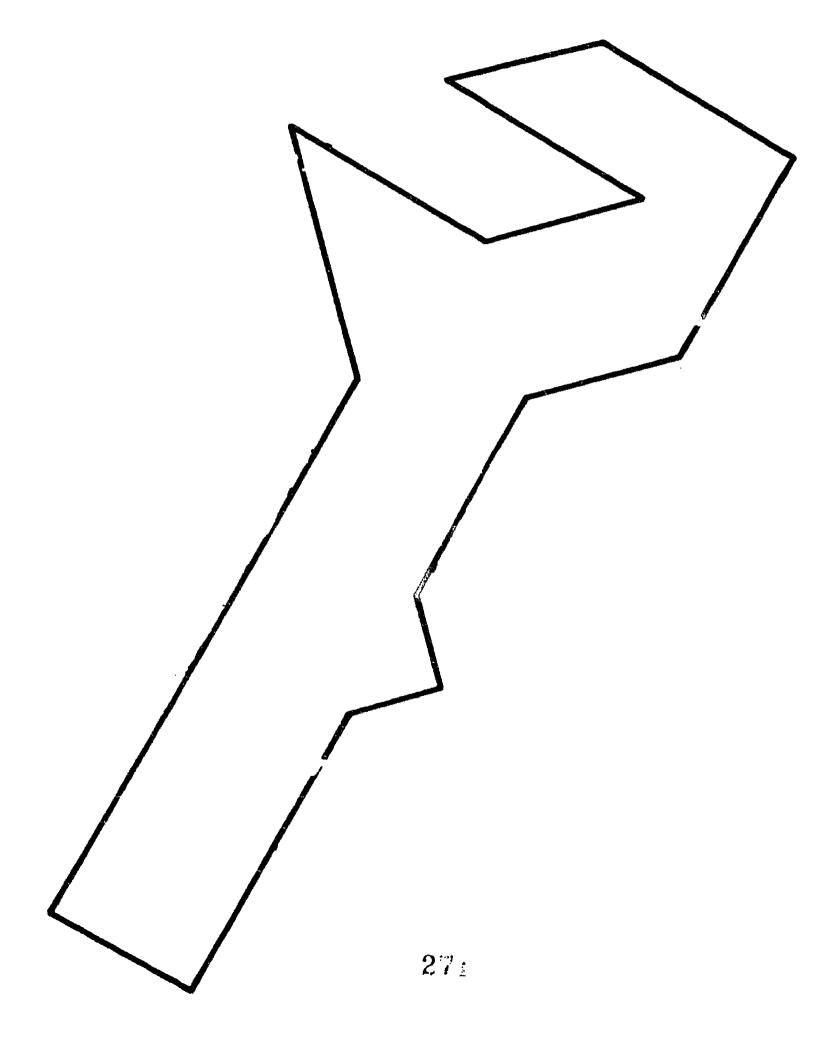
"I worked the Tangram problems and traced to show where the pieces fit."



"I worked the Tangram problems and traced to show where the pieces fit."



"! worked the Tengrem problems and traced to show where the pieces fit."



Mathematician:		
	"Here are measurements mad	- Ie [*]
Inits Used:		
o the Neorest		
		inches
	_	centimeters

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	centimeters	
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	centimeters	.
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Annyani shaq	centimeters -	centimeters
C. Try spc.	27.	
And by Einic	Ad to ,	

Mathematician:					
Units Used:Nearest Unit					
Length Measured	Measurement				
2	75				

Mathematician:					
What was Measured	Number of				
4):7					



lathematician:
"I built houses with the given floors and numbers of stories of
Multilinks. I found the total number of rooms in these houses."

Floors	Rooms/Story Area	Stories Height	Total Rooms Volume
		2	
; •		3	
		4	
		5	
		3	
		L.)	
	•	5	
ERIC.	275		

Mathematician:

"I built houses with the given floors and numbers of stories of Multilinks. I found the total number of rooms in these houses."

Floors	Rooms/Story Area	Stories Height	Total Rooms Volume
		6	
		7	
		8	
		9	·
		6	
		7	
		8	
		9	
ERIC Page that reconstruction to the	27,	AND 114	and the second s

Math	ematician:	 	_	

[&]quot;I used the given number of multilinks to build houses with rectangle or square floors."

Multilinks Used	Floor	Height	Number Sentence
1.5			
Ĉ			
			•
12			
j j			
ERIC Arustras resident by Etic		2'7';	

Mathematician:

"I used the given number of multilinks to build houses with rectangle or square floors."

Multilinks Used	Floor	Height	Number Sentence
16			
ERIC Patters reported by CIC		275	

Mathematician:_____

[&]quot;I used the given number of multilinks to build houses with rectangle or square floors."

Multilinks Used	Floor	Height	Number Sentence
26			
,27			
つ ら			
ERIC Prill Text Production For Exercise		27.4	

Mathematician:_____

"I found the value of each set of coins and bills given."

COINS	VALUE
	•



Mathematicias:_____

"I found the value of each set of coins and bills given."

COINS	VALUE
ONE TO THE TO THE TOTAL TH	
ONE #	
FIVE # ONE #	
FIVE # ONE	

